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Fall 1961

SCI-TECH NEWS

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OF THE
SCIENCE-TECHNOLOGY
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Volume 15 – No. 3

Fall, 1961

WILEY BOOKS

ELEMENTS OF INFRARED TECHNOLOGY

Generation, Transmission, and Detection

By Paul W. Kruse, Laurence D. McGlauchlin, and Richmond B. McQuistan, all of the Honeywell Research Center. Sets forth the basic structure of infrared technology in a rigorous, comprehensive manner. Offers a detailed descriptive and mathematical treatment of infrared radiation and performance of infrared components. **1962. Approx. 556 pages. Prob. $10.75.**

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By William Tyrrell Thomson, University of California, Los Angeles, and Space Technology Laboratories, Inc. Presents the basic dynamical principles and analytic techniques needed to solve dynamical problems in space technology. **1961. 336 pages. $11.50.***

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By Andrew Streitwieser, Jr., University of California, Berkeley. A thorough, up-to-date, and critical discussion of the simple molecular orbital theory of quantum mechanics and its application to the chemical properties and reactors of organic compounds. **1961. Approx. 480 pages. Prob. $14.50.***

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By Grover L. Rogers, The Florida State University, and Wayne L. Causey, The Citadel. An integrated introduction to modern analytic methods in structural engineering. **1962. Approx. 488 pages. Prob. $8.95.**

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By Daniel D. McCracken, McCracken Associates, Inc. A concise, easy-to-follow exposition of FORTRAN, a widely-used computer language that will enable anyone to solve scientific or engineering problems with a computer. **1961. 88 pages. $2.95.**

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By H. F. Schwenkhagen. 1961. In press.

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THE EDITOR SAYS:

The Editor is in the market for comments on the value of Sci-Tech News to you —yes, he means YOU. A lot of time goes into the preparation of Documentation Digest, Bibliography Digest, New Serial Titles and other columns. Are they really worth much to you? Should we publish cumulative lists? How about it?

* * *

How many of you are "Do-ers"? How many of you say: "Well, I would like to contribute effort but I just don't have time . . . I can't write . . . I don't have anything to contribute." How many of you complain that when the new list of local chapter officers is published, that for the most part "it is the same old bunch" just changed around? How many of you are responsible for the accusation that we are becoming "Lazy Americans?" Why is it that even the most active SLA members will tell you: "THE MEASURE OF HIS PROFESSIONAL STATURE CAN BE GAUGED BY HIS PARTICIPATION AND INTEREST . . . One of the first professional duties of a member of any organization is to be ready and willing to contribute his services." Are you ready? If you want a job to contribute a small amount of your free time and you do not know how to get it, write to the Editor and he will do his best, based on the information supplied of your interests, to see that SLA will put your shoulder to the wheel.

SILK COVERING OF PAPERS FOR PRESERVATION AND REPAIR

By MRS. NAOMI PENAAT
Stanford University, Stanford, California

The use of silk for preserving valuable documents is an ancient skill which the Chinese Collection of the Hoover Institute has adapted to their use. For many years we have been using Transparo, a silk chiffon of maximum transparency, for preserving and repairing damaged papers. The method is simple: the silk is covered sparingly with a thin, almost watery paste (of flour, water, and glycerin), the document to be treated is placed on the silk with another thin coating of the paste, then a second sheet of the silk is smoothed onto the document with a brush. All three pieces are then placed between sheets of waxed paper and left under a weight for 24 hours. The document should then be good for another 35 to 40 years.

Approximately 15,000 of the Benjamin Franklin papers, now in the Library of the American Philosophical Society of Philadelphia, have been treated with Transparo. The Los Angeles Public Library also is a great booster for Transparo although their chief use of the silk is to give added strength to the expensive volumes which are heavily used.

GUEST EDITORIAL
THE PERSONNEL OFFICE

By W. J. CONDON

Of all the weird, wonderful and traumatic experiences which you can, as a librarian, indulge in, none can quite match that of a personnel interview with a large industrial firm which finds itself in need of a "librarian." Not even that unforgetable moment (which comes to us all—sooner or later) when one of our number shows us his collection of picture postcards depicting public libraries from Maine to Hawaii (arranged in geographic order)—not even **this** exhalted moment can touch, for sheer drama and hair-raising frustration, the company job interview.

It's true! The average personnel man, impeccably gotten out in neo-Brooks Bros. pro-Continental togs, and bringing to his task the fruits of an equally impeccable Ivy League education would sooner face an Australian Bushman or a South African Pygmy than a librarian.

For our personnel man the librarian is an imponderable. His mind, stunned by the very fact that he is faced with you, boggles in an attempt to envision you **somewhere** on the company organization chart. You are not, after all an engineer or a turret lathe operator or even an operations research man. **Your** slot on the roster lies (you can almost see the smoke come out of our Yale man's ears) at a point somethere between CLERK-TYPIST and SUPERVISOR-STATIONERY STORES — of this much he is certain.

But I think you will get the flavor of the thing better in the following psychodrama, which we may regard as typical:

SCENE: The Personnel Office of the Orbital Vista Astronetics Corp. Seated at a white Formica-topped desk shaped like a gargantuan kidney bean is the Personnel Interview. He is wearing a skin-tight corduroy suit with ¼" lapels and velour pocket flaps. Depending from his throat is a four-in-hand 1/8" wide in the regimental stripe of the Coldstream Guards. His feet are elegently shod in sincere looking Italian pumps fashioned from the skin of the Peruvian Anaconda. Brows knit, he is idly perusing a brochure entitled "Fringe Benefits of the Sense of Belonging: A Survey of 200 Large Corporations."

ENTER the Librarian. He is decked out in nubby nondescript tweeds and is smoking a meerschaum, the bowl of which is at least 3" in diameter. He introduces himself, thus throwing the Pers. Int. completely off guard, and the following conversation ensues:

P. I.: Well . . . ah . . . how was the flight in?

Lib: Fine, thanks, fine.

P. I.: It is a beautiful day . . . well now . . ah I see here that you are interesting in joining us here at Orbital Vista . . .

Lib.: Yes, I wonder if you could tell me a little about the library — where it fits into your organization — budgeting for it, etc?

P. I.: I'm glad you asked me that. You would in the position we have open, be reporting to Joe Blinze, Chief of our PROJECT MOON-CHEESE section — a damned good engineer, and a real good Joe — no pun intended — a real collegiate type actually. Joe has most of the details on the job firmed-up — it's his baby really, you know. Joe, unfortunately, is attending an O. R. convention in Waikiki today, but I know you'll like him.

Lib.: I see, then . . .

P. I.: But let's talk about, hah hah, you for a moment. I see here that you have (a look of glassy-eyed disbelief comes over the P. I.) two college degrees and . . .

Lib.: Yes, I . . .

P. I.: . . . that your last salary was 5500. You know, (the P. I.'s manner becomes, momentarily, that of a confident) that's as much as some of these kids fresh out of MIT get — how long have you been in . . . ah . . . library . . . work by the way?

Lib.: 13 years. Do you think . . .

P. I.: Humm . . . where were we . . . ah . . . oh yes . . . but the situation is changing. It's harder to get a good secretary in this area than one of those MIT kids . . . makes you think doesn't it?

Lib.: Yes, but . . .

P. I.: You know . . . I believe in libraries. I think the folks who work in libraries are doing as important work as those folks who are in . . . ah . . . social work or the Church. They are a vital part of our society—librarians I mean. And the others too, hah hah, of course.

Lib.: I wonder if I could . . .

P. I.: You're right! It's almost time for lunch! (the P. I.'s face brightens up perceptably) We'll be joined—at the Halcyon Lizard by the way—by Fred Bellweather, who heads up our Psychiatric Counselling group, and he'll be able to tell you something about housing here in West Norwich. But I think we just have time now . . .

Lib.: I wonder if . . .

P. I.: . . . for me to outline our Benefit and Welfare Program for you which, by the way, is one of the first of its kind in the country . . THE SCENE fades as the librarian's meerschaum, which has long since been cold, clatters woodenly to the floor.

* * *

A variation on this scene which you often hit runs something like this:

Lib.: Is the position you have open that of Head Librarian?

P. I.: Well, you know, hah hah, in a way it is. (a look pregnant with conspiracy comes over the P. I. (5's face) Miss Smedly, whom you will meet later this afternoon, if we have time, has done an awfully fine job for us for 20 years,

(Continued on Page 132)

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TRAINING FOR ENGINEERING COMMUNICATIONS IN THE YEARS AHEAD

THOMAS L. MINDER, Engineering Librarian
Pennsylvania State University

Address before the Engineering Library Section of the American Society for Engineering Education, Annual meeting, June 29, 1961 at the University of Kentucky, Lexington, Kentucky.

While preparing for this afternoon's address, I found the task almost overwhelming. There is so much to be done in the area of training for communications, and so little information on the methods of implementation. Finally I decided to set the paper aside until after I had heard some of the other programs at this convention. It wasn't long before the words I wanted were being repeated over and over again. CHANGE CHANGE CHANGE—CREATE CREATE CREATE.

Morley Mathewson in his presentation before the Industrial Engineers emphasized that industry today is geared for change. Schools must adapt to this change. The old methods of terminal education must be replaced by a system that will produce a man who has a basic knowledge on which to build. This man must be trained to change as engineering changes. This man must be dynamic, energetic, and creative. He must be able to gather information, synthesize it and present well organized, sound solutions.

The RELATIONS WITH INDUSTRY group reinforced this view in its meeting on Tuesday. The representatives from industry group agreed that the engineer was very much out of date 5 to 10 years after graduation. They emphasized the need for continuous education after graduation. A basic change must take place within the schools to train the engineer to keep up after he leaves school.

In his "State of the Society" message on Monday President Walker repeatedly referred to change and the need for imagination. We are living in what should be for engineers the most exciting period in history. We need young engineers with young ideas. We need young engineers with young imagination. We need young engineers with idealism and courage. And we need young engineering teachers who can inspire and encourage these ideas, imagination, vision, idealism, and courage.

Granted that these men are right, we must ask ourselves, "How does the library profession fit into this emerging new order?" Are our present facilities and our present organization geared to meet the changes and creativity that we can expect in engineering?"

Every speaker I listened to this week unwittingly gave me the answer to the first question. Mathewson listed 24 areas where the future of industrial engineering must show proficiency in the years ahead. Everyone of the 24 implied the need for an ability to find information, or transmit information—in essence 'communicate.' One of the basic reasons for the existence of the Humanities and Social Science group is to teach communications transmission. The Relations With Industry group implied over and over again that the lack of training in the art of information assimilation is making engineers out-of-date soon after graduation.

Perhaps I have labored over this point too long. Those of us here are well aware of the importance of information in the training and practice of engineering. We are also aware that changes are taking place in engineering. But are we aware of the changes, imagination, and creativity that must take must take place within our own group to accompany this new era? Let us look at ourselves. Basically we are still a store. The customer comes in and requests an item. We satisfy his request. He goes away supposedly satisfied. We wait for the next customer. The thousand and one other things that we do need not concern us here. WE STILL LOOK UPON OURSELVES AS A SERVICE WHOSE EXISTENCE IS DICTATED BY THE DEMANDS OF OUR CLIENTELE.

Our product has also undergone little or no change. Have we ever **really** considered our product as anything other than the printed word?

I submit that our whole approach to engineering is wrong. The engineer does not give a damn for the book. He wants information. Where he gets it is immaterial. Our product should be information in any form to be obtained from any place. And we should advertize our products as such.

I further submit that we are not a store keeper — a passive agent in an intellectual community. No. we are an integral part of the whole engineering profession. For example, when a research team is formed to work on a problem, the librarian should be an active member of that team. When the teacher outlines a course, the librarian should be consulted on the ways and means of helping the instructor, or ways of integrating information training into the course. Information should be a tool for the engineer to use along with his slide rule.

A library organized along these lines must be sensitive to the changes and creative impulses of engineering. Are we organized to do this? No. the book. the shelf, and a set of rules establishes our limits. Can we organize to live in this changing world? Probably not completely. But we can come close if we rebuild our libraries and create new concepts along flexible lines. Let the engineers have more of a say in the basic character of our

(Continued to Page 132)

FILING AND LOCATING ELECTRONIC DATA

Keeping the latest electronic parts data at one's beck-and-call is a problem which has been plaguing technical librarians, engineers, and purchasing agents ever since the start of the electronic boom a decade ago. Many persons have devised "personal" filing systems—but too often they end up a disarray of misfiled, or unfiled papers.

Is there a sensible, easy-to-use, time-saving system for filing the vast amount of data sheets, spec sheets, catalogs, magazine clippings and other papers which offer valuable electronic parts information? The answer is Yes. Called the **eem** File System it was devised by the editors of **eem** — Electronic Engineers Master, catalog-directory of the electronics industry.

EEM's catalog section is divided into 51 product categories, each representing a key product area in the industry. The product categories were originally devised with the assistance of practicing electronics engineers. Questionnaires and in-person interviews indicated that 51 product categories would adequately cover the entire electronics industry. The file system is based on **eem's** 51 basic product categories and is subdivided accordingly. As a service to the industry, **eem** provides gummed tabs imprinted with the eem File numbers (at no charge) which may be affixed to plain manila folders, or a set of preprinted file folders at a nominal cost of $3.50. However, it should be noted that the file folders provided by **eem** are in no way restricted to the size of the system.

Since the product sections of the **eem** file are general categories, **eem** supplies file system users with an index of over 3000 products, indicating in which of the 51 categories information on such a product should be filed. This index actually appears in the **eem** catalog and is reprinted for **eem** file system users. It is also available at no charge.

Filiing information is easy. All a user need to do is set up the file in a space convenient for his needs. (Many of the more than 9,000 systems in use today are company or individual systems and take reasonably large amounts of space. But smaller, "personal" systems may also be set up, using a box or file cabinet drawer, and the file folders provided by **eem.**) As spec sheets, data sheets, catalogs, magazine clippings and the like become available, they need only be marked with the appropriate **eem** File number from the index, and filed. (e.g.: all semiconductor materials would be filed in section 4800; switches and circuit breakers in section 5100; power supply in section 4000, etc.).

The publisher of **eem** has made a concerted effort to have electronics manufacturers imprint the **eem** file number on all literature, thereby eliminating the need to have the file system user look up the product section number. More than 1,000 manufacturers are now imprinting their literature with the **eem** file numbers. This action has improved efficiency of the **eem** File system and assures the users of greater availability of literature in one plac, at one time, when it is needed for design or purchasing purposes.

Too, the new products monthly, Electronics Product Magazine, notes the **eem** file number on each of the new products listed, making it convenient to clip and file data from that publication.

Information retrieval from the **eem** File system is easy. All one needs to do is to reverse the filing procedure by referring to the index, finding the product he is interested in and going directly to the applicable category. If the file is up to date, all the information on the product in which he is interested, "is in the palm of his hand."

The advantages to the **eem** system are manifold:

1. It saves time—time in filing material, time in locating material.

2. The system is useful to technical librarians, non-technical librarians, engineers and scientists, purchasing agents, marketing departments or anyone keeping an industry-wide electronic technical library section.

3. It can be maintained by technical and non-technical personnel. An engineer in the plant can send an assistant to the file and she will have no difficulty finding the correct folder for him.

4. It allows one to keep all information on one type of product in one place. It's easy for new material to be inserted and old material to be discarded.

5. All types of material may be filed (e.g.: clippings, data sheets, spec sheets, catalogs, even personal notes).

6. It allows for instant comparison of specifications of the same product made by several companies.

7. It saves money—the system is free for the asking from **eem**, 60 Madison Avenue, Hempstead, N. Y.

The Editor would like to remind you that the deadline for the winter 61 issue is Dec. 15; Spring 62 issue is March 1st, '62 Please send all material to home address.

Back issues of STN, especially winter 59 thru Summer 61 are needed. Please send extra copies or throw-away copies to the Editor.

CURRENT INDEX TO ABSTRACTING SERVICES

By FRANK G. BENNETT IV

In the Feb. 1959 issue of the Southern California Chapter Bulletin, I published an article under the above title. Since that time, I have accumulated several comments and even more determination that CIAS is **the answer to our indexing problem.**

What I propose is simple enough: to make a current index to all of the indices of technical literature. The objective is to create AWARENESS of work that has been published and indexed. The METHOD is to make maximum use of machines but to print a conventional form for maximum distribution and use. The REASON is that few literature searchers have access to all of the indexes on all subjects in all languages, and here (in the accumulated volume) in one alphabet would be all of the indexed technical literature in the world.

While our official government line does not admit that we are competing with the Russians, it is obvious to the man in the streets both here and in CCCP that there is a deadly race going on. We are racing not only with hardware but with ideas. But having an immense reservoir of ideas is not enough: they must be organized and indexed in such a way that researchers are AWARE they exist. CIAS will create awareness. CIAS will organize ideas.

I took a wild guess at the number of abstracts or indexed items to be included in order to obtain a starting point for a cost analysis. The machine time and printing estimates were based on 700,000 items, of which each would have 5 subject and two author entries, for a total of around 5,000,000 entries per year. The printing involved 22 issues on scrap type paper (2 per month for 11 months) and one big cummulated volume on bond of all 22 tapes. The cost was based on 10,000 subscriptions per year. The throwaway issues would resemble the Central L. A. phone book in format in size and thickness; the permanent cumulative issue would be s'ightly larger to permit customer binding.

Most of the sampling of the indexes below was done around the year of 1957. Of course, most of these are much larger now and the confusion is even greater.

Nuclear Science Abstracts	NSA	14,042
Chemical Abstracts	CA	112,336
Engineering Index	EI	12,610
Science Abstracts	SA-A	10,001
	SA-B	6,451
Abstracts of Classified Rept.	ACR	2,809
Technical Abstracts Bull.	TAB	13,560
Ceramics Abstracts	CER	2,820
Review of Metal Literature	RML	8,320
Current List of Med. Lit.	CLML	104,588
Psychological Abstracts	PA	9,074
Biological Abstracts	BA	40,061
Zoological Record	ZR	18,238
Bibliography of Agriculture	BOA	98,409
Dissertations Abstracts	DA	4,532
U. S. Gov. Res. Reports	GRR	6,080
International Abst. Biol. Sc.	IABS	24,323
Excerpta Medica	EM	61,130
N.A.S.A. Abstracts	NASA	3,615
Arctic Bibliography	AB	10,000
Applied Sc. & Tech. Index	ASTI	55,500
		619,499

The mechanics of this operation would be fairly simple. Most indices include an author index and these would be punched onto cards directly from copy. The subject index would be punched from the abstract after a reviewer had underlined the appropriate words and subjects and placed any of his choosing in the border. The simplest type of card sorter and computer would arrange these cards and prepare the magnetic tape or punched tape. The punched tape would then be fed into the automatic lineotype for printing. Or, the magnetic tape would be fed into the print-out for off-set reproductions.

While most librarians get a blank look in their faces when asked about computer costs, anyone can come up with a fairly close estimate. For example, the average speed of a key-punch operator is 7,0000 key strokes per hour and their pay is around $90.00 per week. Using 37 strokes (16 for the reference and 21 for the name) the author list amounts to a total of 400 weeks of work. Using the same system on the subject index using 76 key strokes (60 for the subject and 16 for the reference) we come up with 2,026 weeks of work. To pick just one of the many computers out of the hat, Univac II will sort 18,000 cards an hour for $350.00 per; to handle 5,000,000 cards once, the machine would take around 272 hours, or around 23 days (24 hours each) to run them all thru twice.

If the indexing services produced punched tapes in their natural production processes, the above time and costs would be considerably reduced.

One of the big hassles in any index is terminology. How would you solve the many different uses of words in this complicated language of ours? When would you use a librarian's word "Reference work"; when would you use the documentalist's word "Information retrieval." Short of a National Technical Thesaurus (which I have suggested to ADI), about the only logical solution is to place the field in brackets after the term: Matter (Phys.) - Matter (Chem.) - Matter (Biol.). etc. In the case of the two above, see also references would ease users over the difficulty. While there has been a loud hue and cry over terminology conflicts, and since each field goes blithely on its own selfish way with no regard to related fields. perhaps an index which combines all technical fields would

light the way towards recognition of sematic cooperation.

Please to remember that CIAS is an index to indexes. If you are interested in a bibliography on "Growing crystals," under "Crystals - Growing" in CIAS, you would find the following: "NSA 12:13002." This would mean that if you did not have Nuclear Science Abstracts, you would call a friend that did and he would give you the full reference which is: "Crystal growth, a comprehensive bibliography of journals and articles and unclassified reports, 1961-1967, by F. G. Bennett IV, Atomics International, NAA-SR-2693." If you did not have Nuc. Sc. Ab., you would not be aware that there was such a bibliography because I don't think it was indexed anywhere else (maybe STN). Obviously, CIAS could not refer directly to the original reference, as the index from which the information was taken would become redundant. So by having a key to all the literature you are aware that there is information in another definite index; procuring that index, is of course, your problem, but at least you know about it and you don't have to spend months doing a complete job to duplicate it.

Most indexes in the same field have a tendancy to eliminate one, as was well demonstrated in the Current List of Medical Literature competition with Quarterly Cumulative Medicus and the subsequent Index Medicus. Happily these two got together—one to to the current index and the other to do the cumulative volume. CIAS competes with no other index; CIAS will stimulate the use and value of the other technical indexes because researchers will discover indexes they never knew existed. They will be referred to indexes; they will want to subscribe to. All the indices included in CIAS will benefit by getting more use. Furthermore, how many times have you wished for an author index to ASTI? This would be a service not now available.

In case there is anyone with a bundle reading this article, here is a 1959 cost estimate of CIAS:

Author List	$ 36,000
Subject list	182,340
Subject Indexing	30,000
Machine Time	200,000
Semi-Monthly printing	759,999
22 cumulative	696,000
Admin. & Sup.	70,000
Total	around $2,000,000 per year

Quite a piece of change. Obviously beyond the means of the average behind-the-books librarian. Ten thousand subscribers would have to come across with $200. each to make this be self-supportive. Complete coverage might well double the cost. The problem is to sell this idea to the government as a component of National Defense and to make it available to educational institutions for free and a nominal charge to industry. Who expects a battleship to pay for itself? Ideas have become a front line defense and attack for our very preservation: Let us hope that CIAS will come in time.

II

With the above battle-cry still ringing in your ears, I would like to include some very interesting comments from Johanna Tallman, USLA Engineering Library. While we apparently differ in our evaluation of CIAS, the standards listed below make for good reading. Dear Frank:

If we ever find a satisfactory solution to the control of technical literature it will be because many people have given the matter serious thought and have written papers which can be evaluated by others. Your article . . . is provocative in its new approach. I would like to examine it in the light of what I call basic axioms, some of which may not be considered valid or may not even have occurred to the newcomer to documentation. These axioms are based on many years of experience and reflect the realities of the complex problems involved.

1. Any index is better than no index, even if it is limited in scope, published long after the articles it refers to are published and is difficult to use.

2. A 100% valid and vastly comprehensive information retrieval program is not fesasible. There are too many complex factors involved, especially those dealing with classifying and codifying knowledge and ideas.

3. The idea that a technical publication more than 6 months old is out of date and of little value is quite wrong. . . .

4. It is extremely difficult to get cooperation towards a joint solution from all concerned . . .

5. Machines can do little more than qualified humans can do. Their main advantage is speed . . . It is often quicker for a person to get the information he wants directly than to run cards or tapes through a machine.

6. Rarely does a research person want an all-out literature survey and all the information published on a specific subject. Most of the time he is content with enough information to solve his problem of the moment . . .

7. There is a limit to the price that libraries are willing or able to pay for a given service . . .

8. An author listing can have subject reference value . . .

9. The bigger the index, the more specific should be the subject approach . . .

10. Reference citations need to be clear and complete . . .

Now to comment on your proposed **Current Index to Abstracting Services.** In general, I like the idea of such an index (cf. axioms 1 & 3). An author index to 700,000 or more abstracts per year will have a definite reference value (cf. axiom 8) specially if it includes references to services which do not have their own author indexes. Your figure should not be construed as 700,000 **different articles,** since many articles are indexed by several abstracting services.

(Author's note: It may come as a shock to some of you, but Chem. Abst. does not index completely all of the journals included in their scanning list: they index only the ones that apply to their field and only the important ones. There will be duplication, true, but this increases the user's chances of having the item needed.)

We all have our preferences, but I would like to see you include the following services: Applied Mechanics Reviews — AMR; British Scientific Instrument Assoc. Bulletin — BSIRA; Bulletin Signaletique, parts 1 & 2 only — BS-1 & BS-2; Index Aeronauticus — IA; Mathematical Review — MR; and Technical Translations — TT.

(Author's note: Very good. And there should be many more.)

Since you want this index to be generally useful, I believe you should omit Abstracts of Classified Reports and the Technical Abstracts Bulletin, as these, and the reports they index, are available only to limited and qualified agencies. Perhaps you should not include Applied Science & Technology Index. It contains almost no abstracts to speak of, although its subject headings, coverage, and promptness are in its favor.

(Author's note: I believe in the value of awareness. It may be of interest to a scientist that someone is working on two phase or the superconductivity of Nb-Zr alloys flow even if he cannot establish "Need to know" with AEC or ASTIA. I would rather leave them in even if some (TAB) or all (ACR) are classified. These agencies would have something to say about inclusion also. The title CIAS is almost a misnomer because I would like to include Technical indices as well as abstracting services. ASTI would have to stay.)

There is merit in having your CIAS refer to the abstracts rather than to the original sources; your citations can be brief (EI '57: 462) and still retain the complete original citations in the original abstracts ((cf. axiom 10).

As subject coding is one of the chief problems of any documentation program (cf. axioms 2, 5, 9), I am somewhat dismayed at your casual statements: "Since many abstract journals have subject indices with the individual issue, these would be punched directly from copy also. In the case of **Chemical Abstracts** . . . professional catalogers with chemistry background would have to provide the key punchers with a list of subjects." Do you realize what sort of hodge-podge you would end up with by throwing all these varied subject headings, terms, approaches, categories, etc. into one alphabetical hopper?

Just to give you an example, following are the subject headings or categories under which information on **computers** is listed in several of the indexes:

AMR — Computing methods and computers.

ASTI — Calculating machines.

EI — Computers.

MR — Pulse circuits; digital circuits. Computer applications; data processing.

GRR — Instruments.

(Author's note: I deserve every word of this. But the problem is not unsurmountable: the computer would be programmed to throw all of these subjects into one category: "computers." I should hope sub-descriptors could be attached to all subjects, if possible. I was careful not to include this statement in this paper, but the inference is there, nevertheless.)

I agree that some organization (maybe not the Library of Congress) should develop an up-to-date, acceptable Subject Heading and cross-reference list. The compilers of such a list should not be bound by tradition or the necessity of conforming to old headings merely because of the problems of converting existing catalogs (for example LC heading **aeroplanes**) . . . This is a monumental job . . . but one which would be a real aid in getting subject control over this vast literature.

It is, of course, much easier to criticize someone else's proposals than to develop one's own ideas. Good luck with yours.

(Author's note: There was more. Such as criticizing my estimate of an indexer being able to handle 1000 abstracts per week. She saw only 500 subscribers at $100.00 each. She did not think this project, even if perfected, would be a necessary and acceptable tool (cf. axiom 6). She was more inclined towards an author index only. Even though Johanna ended up on the other side of the fence, the editor places a lot of value on her critique and especially values her list of axioms. Since the Editor has not been receiving many commemorative stamps lately, he would greatly appreciate comments on CIAS. The idea of CIAS came to me one day after I had spent several non-productive days going through every index I could find to locate a reference which I felt in my bones must exist: I am sure all of you bibliographic bloodhounds have had this experience, maybe many times. What one reference tool would have given me peace of mind? CIAS, for the period it covers, of course. Having started

CIAS, there is no reason why it could not be done for past years, as well as the future ones. I guess I will never forget the time I found a reference in a 1892 Comp. Rend. that supplied the missing information a researcher needed for growing perfect emerald crystals. While I do not express hope of going back to 1900, it would be useful to back up 10 years.)

TRAINING FOR ENGINEERING

(Continued From Page 127)

operations. Make the library an integral part of engineering—not just an appendage to the library profession. Plan more for the future of engineering, not the preservation of the library. Aggressively force information into engineering practice—not wait for the user to ask for something he has never had, appreciated, or understood.

These are strong words and I am sure that many of us will become discouraged by the lack of time, money, support, and personnel. But changes must be made even if the pace seems slow. Since Sunday I have yet to hear an engineer in these sessions look to the library or other permanent information sources as a place to help him answer his questions. If each of us can successfully indoctrinate one class per year in the proper use of information sources as a tool, we will begin to see the results almost immediately.

We can be a gold mine for engineering practice, but unless we are willing to change, show some imagination and creativity, expand a lot of energy, and build respectable leadership, we will go into suspended animation. One man said that Industrial Engineering must change if it is to avoid death within ten years. We will not die. Our brothers in the arts will sustain us. But we will become the great crippler of engineering, unless we change and create.

REFERENCES

(1) "What does Industry Expect of the Industrial Engineering Graduate?" M. H. Mathewson, Director, Industrial Engineering Div., International Minerals & Chemical Corp., Skokie, Illinois. Paper presented before the Industrial Engineering Section of the ASEE at the University of Kentucky, Lexington, on June 26, 1961.
(2) "Industry Speaks on the Effectiveness of Engineering Education." Discussion before the Relations with Industry Section of ASEE at the University of Kentucky, Lexington, on Tuesday June 27, 1961.
(3) "Ancient Society for Eliminating Engineers?" Address by Eric A. Walker, President of ASEE before the General Session of the Society on June 26, 1961.

GUEST EDITORIAL

(Continued From Page 124)

but she isn't, hah hah, getting any younger—as a matter of fact she's getting to be something of a fuddy-duddy—and we want to get someone fresh and vital in to take over the whole operation. We want to, frankly, sort of ease old Miss Smedly out—and I think you might just fit the bill.

Lib.: I see. When, if you don't mind my asking, is Miss . . .er . . . Smedly actually due to retire?

P. I.: In 5 years, but . . .

THE SCENE fades as the librarian's jaw, which has long since been agape, clatters woodenly to the floor.

* * *

Well, do you see what I mean? The average personnel office in a large corporation has that aura of drama, charged with excitement and the feeling that a weighty decision is just around the corner, that we would normally associate only with, say, a library school. But perhaps we'd better leave that for the next issue, n'est pas?

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AIRCRAFT

430. A bibliography of aircraft noise. Supplement 5.
London, Great Britain, Ministry of Aviation, Sept. 1960. 29p. (TIL/BIB (U)/11, Suppl. 5) (AD-246 235)

431. Literature search on air traffic control and the electronic equipment needs of aviation.
I. Miller. Downey, Calif., Autonetics, Feb. 2, 1961. 252p. (Rept. EM-6428) (AD-251 475)

The 835 references are arranged in the categories: general (computers, electronic aids and safety); anti-collision and proximity warning; communication equipment; data and display systems; foreign operations; landing, navigation; and radar.

ALUMINUM

432. Aluminum alloys.
F. B. Murphy, INDUS. ENG. CHEM. 52.953, Nov. 1960.

A review of 34 references of current research with references to development of new alloys such as X392 and X6296, production of Al powder metallurgy impact extrusions, application in chemical and brewing industries use of A1 in cryogenics, fabrication, and equipment.

433. Aluminum hydride. A literature review.
Sunnyvale, Calif., Lockheed Aircraft Corp., Missiles and Space Division, A Aug. 1960. 19p. (Rept. LMSD-703150) (PB 171 534) Available from OTS, 0.75c

A review, with 31 references.

ANIMALS

434. Bibliography of the dog.
Marcus M. Mason. Ames, Iowa. State University Press, 1959. 401p. $6.00

The 12,369 references provide information on diseases, physiologic and pathologic studies performed, experiments, and possible use of dogs as experimental material.

435. A guide to production, care, and use of laboratory animals. An annotated bibliography.
J.S. Cass, I.R. Campbell, and Lilli Lange. FEDERATION PROC. 19, Suppl 6, Part 3:1-145, Dec. 1960.

References cover environmental factors, diseases, nutrition, breeding procurement and use of animals, special techniques of handling and administration of colonies.

ATMOSPHERIC PHENOMENA

436. An annotated bibliography on night airglow.
A. J. Meglis and Ismail Saad. METEOROL. & GEOASTROPHYS. ABS. 11: 1845-1877, Nov. 1960.

Brings up to date Selected Annotated Bibliography on Night Air Glow appearing in Meteorol, Abs. & Bib. 8:213-249, Feb. 1957.

437. Ball lightning bibliography, 1950-1960.
Washington, D.C., Library of Congress, Science Technology Division, 1961. 15p. Available on request from LC.

This bibliography adds 43 annotated references to those already available in the bibliographies on the subject by Walther Brand (Hamburg, Verlag von Henri Grand, 1923) and R. Anoil (Meteorol, Rundschau 7:220-222, Nov/Dec. 1954).

438. Physics of the ionization processes in aid. Part I. Formation and production of ions. An annotated bibliography.
G. R. Evans. Sunnyvale, Calif., Lockheed Aircraft Corp. Missiles and Space Division, Nov. 1960. 109p. (Spec. Bib. SB-60-40) (AD 249 645)

There are 278 references in this, part I, of a fourpart bibliography which was undertaken as a revision to a 1958 bibliography entitled "Physics of the Ionization Processes in Air" issued as LMSD-483618.

BERYLLIUM

439. Analytical chemistry of beryllium. A review.
L. E. Smythe and R.N. Whittem. An-ALYST 86.83-94, Feb. 1961.

A review with 159 references.

440. Beryllium: A survey of the literature. Supplement no. 3.
K.D. Carroll. Sunnyvale, Calif., Lockheed Aircraft Corp., Dec. 1960. 93p. (Suppl. 3 to Rept. 288190) AD-253 284) Available from OTS PB 171851, $2.25.

441. A selected guide to beryllium literature.
M. Kinney. Downey, Calif., Autonetics, Mar. 16, 1961. 174p. (Rept. EM-6558) AD-253 352)

There are 491 references arranged alphabetically by title in each of the following categories: alloys and compounds; beryllium copper; chemical, physical and mechanical properties; electroplating fabrication; toxicity; power metallurgy; and literature surveys. Period covered is 1915-1960.

COMPUTERS

442. A synchronous sequential logic design. A selected bibliography.
M. Kinney. Downey, Calif., Autonetics, Oct. 13, 1960. 43p. (Rept. EM-6317) AD-245 300)

Presented herein are 80 partially annotated references

selected from the literature for the period 1947-1960. Application to digital computers is emphasized.

443. Character recognition devices for electronic computers. An annotated bibliography.
K. D. Carroll. Sunnyvale, Calif., Lockheed Aircraft Corp. Missiles and Space Division, Nov. 1960. 96p. (Special Res. Bib ERB 60-11) (AD 251 661)

Bibliography of 311 items covering learning machines reading machines, and machines for speech recognition.

444. Computer memories: A survey of the state-of-the-art.
J. A. Rajchman. INST. RADIO ENGRS. PROC. 49:104-127, Jan. 1961.

Includes 96 references.

CONTROL SYSTEMS

445. Adaptive or self-optimizing control systems.
J. E. Britton and H. J. Kushner. Lexington, Mass., Massachusetts Institute of Technology, Lincoln Laboratory, Feb. 8, 1961. 14p.

Engineering literature from 1950 to February 1961 is referenced in chronological order. Six other bibliographies on the subject are included at the end of the 161-item listing.

446. Process control and automation.
T. J. Williams. INDUS. ENG. CHEM. 53:166-168, Feb. 1961.

A review with 110 references, covering the period 1 December 1959 to 30 November 1960.

447. Soviet literature on control systems.
P. L. Simmons and H.A. Pappo. INST. RADIO ENGRS. TRANS. AC-5: 142-147, June 1960.

The bibliography cites most of the better known articles for the period January 1952 to March 1959. Emphasis is on theoretical aspects. English translations are indicated, and some references are annotated.

448. Theory of nonlinear control.
Y. H. Ku. FRANKLIN INST. J. 271: 108-144, Feb. 1961.

Includes 157 references.

449. Electrochemical fuel cells. Part 1.
K. D. Carroll. Sunnyvale, Calif., Lockheed Aircraft Corp., Missiles and Space Division, Nov. 1960. 53p. (Special Res. Bib. SRB-60-5) (AD-251 660)

Citations numbering 187 present the more recent publications on electrochemical fuel cells, redox reactions, regenerative and hydrogen-oxygen fuel cell systems.

FUEL CELLS

450. Electrochemical fuel cells. Part II. An annotated bibliography.
Maureen A. Pearcy. Sunnyvale, Calif., Lockheed Aircraft Corp., Missiles and Space Division, Feb. 1961. 41 p. (Special Res. Bib. SRB 60-5)

This supplements Part I issued in November 1960 by adding 89 references to the 1960 literature.

451. Fuel cells.
London, Eng., International Nickel Co., (Mond) Ltd., Technical Information Section, Sept. 1960. 27p.

Approximately 100 references, with notations, are included.

452. Fuel cells and related research.
Washington, D.C., Office of Technical Services, Dept. of Commerce, Feb. 1961. 7p. (Selective Bib. SB-447) 10c

Includes references to reports dealing with fuel cells and related research in the general fields of batteries, electrical power sources and electro-chemistry.

453. Investigation of composite or stacked variable energy gap photovoltaic solar energy converter. Final Report.
Pasadena, Calif., Electro-Optical Systems, Inc., Sept. 1960. 87p., iuus., (Rept. 400) (Contract DA36-039-sc-65244)

A bibliography of 145 references covers the photovoltaic effect and solar cells, aluminum antimonide, and cadmium selenide.

454. Photovoltaic cells.
Maureen A. Pearcy. Sunnyvale, Calif., Lockheed Aircraft Corp., Missiles and Space Division, Aug. 11,1960. 42p. (Special Bib. SB-60-28) (AD-248 065)

Photoelectric cells, photoelectric effect, photoelectric effect (gamma rays).

HEAT TRANSFER

455. Bibliography on two-phase heat transfer.
G. W. Maurer. Washington, D.C., U.S. Atomic Energy Comission, 1960. 19p. (WAPD-TM-249) 75c

Includes many references.

456. Heat transfer and heat exchange.
Washington, D.C., Office of Technical Services, Dept. of Commerce, Feb. 1961. 33p. (Selective Bib. 450) 10c

About 300 references are listed, some with abstracts.

457. A review of heat-transfer literature 1959.
E.R.G. Eckert, J.P. Hartnett, T.F. Irvine, and E.M. Sparrow. MECH. ENG. 82:47-61, Aug.1960.

Surveys conduction, channel flow, boundary layer flow with separated regions, transfer mechanism, natural convection, convection from rotating surfaces, combined heat and mass transfer, change of phase, radiation, liquid metals, low- density heat transfer, measurement techniques, heat transfer applications. Includes 322 references.

HIGH TEMPERATURE RESEARCH

458. Directory and bibliography of high-temperature condensed states research in Canada and elsewhere, April to June 1960.
N.F.H. Bright. Ottawa, Canada, Dept. Mines and Tech. Surveys, Mines Branch, Aug.25,1960. 63p. (Info. Circ. 1C 119) 25c

Contains a bibliography of work on high-temperature condensed states published in Canadian journals during the period April to June 1950. Also included are bibliographies of work published in Austria, France, Belgium, Scandinavia, the U.S.S.R., and the U.S.A.

459. High temperature research (ceramics, gases, lubricants, plastics, electrical and electronic equipment, etc.).
Washington, D.C.,Office of Technical Services, Dept. of Comerce, Feb. 1961.

(See next page)

36p. (Selective Bib. SB-453) 10c

There are 473 references arranged in the following categories: ceramics and refactories; gases; lubricants and hydraulic fluids; plastics, paints and textiles; electrical and electronic equipment; and general research.

INSTRUMENTATION

460. Effects of electromagnetic fields upon instrumentation components and systems.

G.R. Evans. Sunnyvale, Calif., Lockheed Aircraft Corp., Missiles and Space Division, Jly.27,1960. 53p. (Special Bib. SB-60-27)

180 items are referenced, some with brief notes.

461. Instrumentation bibliography.

London, Great Britain, Ministry of Aviation, Jan. 1961. 54p. (Rept. TIL/BIB/50) (AD-253 346)

Includes 3324 references on general instrumentation, calibration, combustion, electrical and electronic devices, test facilities, accelerometers, computers, displacement measurements, flow measurement and control, pressure and thrust measurement, recording, shock and vibration, strain gage measurements, temperature measurement and time measurement.

462. Nuclear instrumentation.

H.D. Raleigh and R.L. Scott. Oak Ridge, Tenn., U.S. Atomic Energy Commission, Apr. 1960. 108p. (TID-3550) Available from OTS, $2.25.

Included are 1,219 references on the design, construction, and application of instruments for radio-active environments. Reactor instrumentation and radiation detection instruments comprise the major portion of the references which have been selected from scientific journals, and Nuclear Science Abstracts.

MAPS AND MAPPING

463. Guide to historical cartography: A selected annotated list of references on the history of maps and map making.

W.W. Ristow and C.E. LeGear. Washington, D.C. Library of Congress, Map Division, 1961. enl.ed.,rev.,18p.

For sale by Card Division, L. C., 35c.

464. Photogrammetry. (Supplement to CTR-335).

Washington, D.C., Office of Technical Services, Dept. of Commerce, Map 1960. 7p. (Selective Bib. SB 416) 10c

A bibliography of 29 reports listed in the two OTS monthy abstract journals: U.S. Government Research and Technical Translations. Reports listed cover photogrammetry and aerial photography, as well as general research on maps and mappings.

MATHEMATICS

465. A bibliography on approximate integration.

A.H. Stroud. MATH. OF COMPUT. 15: 52-80, Jan.1961.

This bibligrophy of approximately 450 references is an attempt to provide a reference to the knowledge concerning approximate integration methods, and to make better known the recent contributions o this field.

466. Index to the distributions of mathematical statistics.

F.A. Haight. J.RES. 65B:23-60, Jan/Mar.1961.

Presentation of a fairly complete index of references to results on statistical distributions published before January 1958. The material given for each distribution is a list of references relating to: (1) functions and constants which characterize the distribution, (2) derived distributions, (3) estimation, (4) testing hypothesis, and (5) miscellaneous. The distributions covered are characterized as normal, type III, binomial, discrete, distributions over (a, b), distributions over (a,—), distributions over (1_,_), miscellaneous univariate, miscellaneous bivariate, and miscellaneous multivariate.

467. Selected bibliography of statistical literature, 1930-1957. IV—Markov chains and stochastic processes.

L.S. Deming and D. Gupta. J. RES. 65B:61-93, Jan/Mar.1961.

References taken from technical journals published since 1930 are arranged alphabetically within the following groupings, stochastic processes—general theory, Markov processes, stationary processes, special processes and applications.

MICROMINIATURIZATION

468. A guide to the literature on microminiaturization.

G.I. Chandler. Downey, Calif., Autonetics, May 1,1960. 95p. (Rept. EM-6100) (AD-241 968)

This annotated bibliography represents a survey of available literature on microminiaturization during the period 1954 through 1960. There are 216 references arranged under the year of publication, with the greatest number appearing under 1959. Author, corporate author, source, and subject indexes follow the references.

469. Microminiature oscillators. An annotated bibliography.

G.R. Evans. Sunnyvale, Calif., Lockheed Aircraft Corp., Missiles and Space Division, Mar.1961. 150p. (Special Res. Bib. SRB-61-1)

This complition includes 351 annotated references to articles and reports which have been written since 1950.

470. Microminiaturization of passive networks. An annotated bibliography.

A.A. Beltran. Sunnyvale, Calif., Lockheed Aircraft Corp., Missiles and Space Division, Dec.1960. 98p. (Special Res. Bib. SRB-60-8) (AD-251 508)

This annotated bibliography, consisting of 170 references, is concerned primarily with distributed parameter networks, null and notch networks, micromodules, microsystem circuits, solid state circuits, and the components and techniques applicable to passive network miniaturization.

OIL

471. Bibliography of thermal methods of oil recovery.

W.T. Wertman, N.A. Caspero, and T.E. Sterner. Washington, D.C., U.S. Bureau of Mines, 1960. 13p. (Info. Circ. 7958)

This bibliography includes 249 references (no annotations) to patents and published literature, listed alphabetically by author by intervals of years beginning with 1899 and ending with June 1959.

472. A century of oil and gas in books. A descriptive bibliography.

E.B. Swanson. New York, Appleton-Century-Crofts, 1960. 214p. $4.75.

Appropriately issued in 1960, since the year 1959 marked the centennial of the oil industry in North America, this work includes material on all aspects of oil and gas in various types of printed media.

473. Literature pertaining to the art and science of oil burning for residential applications.
C.F. Speich and D.W. Locklin. New York, American Petroleum Institute, Jan. 1960. 110p. (Pub. 1937)

Compiled by Battelle Memorial Institute, this is a review of technical literature and a compilation of abstracts. Sixteen broad subject classifications include such subjects as fuel-oil atomization, ignition, physics and chemistry of combustion, fuel-aid mixing and recirculation, surface combustion, chimneys, equipment developments, and standards.

PLANTS

474. Bibliography of Eastern Asiatic botany —Supplement I.
E.H. Walker. Washington, D.C., American Institute of Biological Sciences, 1960?. 414p.

This volume contains over 11,000 entries, extending through 1958 the coverage of the original bibliography which closed with 1936. Price, $18.50.

475. Geographical guide to floras of world, annotated list with special reference to useful plants and common plant names: Part 2.
S.F. Blake. Washington, D.C., U.S. Dept. of Agriculture, Feb. 1961. 742p. (Misc. Pub. 797)

For sale by GPO, $2.75.

476. Phytophatology. Bibliography of reviews, 1949-1959.
Ithaca, N.Y. American Phytophatological Society, 1960. 116p. (Phytopathology vl. 50, no. 8, pt. 2)

International in scope, the material, which is annotated, is listed under the classifications of general considerations, causal factors, host plants, hostpathogen interaction, disease in populations, disease categories, disease control, instrumentation, and research techniques.

RECRYSTALLIZATION

477. Grain boundary structure and recrystalization.
K. Lucke. Z. METALLKUNDE 52: 1-12, Jan.1961.

A critical summary of existing knowledge, including 47 references. In German.

478. Movement of large-angle grain boundaries in recrystallization.
P.A. Beck. Z.METALLKUNDE 52: 13-19, Jan.1961.

A critical survey, including 30 references. In German.

479. Process of nucleation in recrystallization.
W.G. Burgers. Z.METALLKUNDE 52: 19-26, Jan.1961.

Current theoretical concepts, including 68 references. In German.

TIN

480. Tin and its alloys.
R.M. MacIntosh. INDUS.ENG. CHEM. 52:947-952, Nov.1960

A literature review of 222 references covering research in tinplate, cans and packaging; electroplating; solders, soldering practices, joining; bearings; hot tinning practices; corrosion research; use of tin in removing and nitrogen from Ti base alloys

481. Tin oxides and titanium oxides.
M.J. Chapman. Canoga Park, Calif. Atomics International, Sept. 28, 1960. 14p. (NAA-SR-Memo-5729) Available from OTS $3.30(ph); $2.40 (mf).

References (174) were taken from books, reports, patents, and journals for the period 1947 to 1960.

482. Oscillators and related devices used in USSR satellites. A bibliography.
Washington, D.C., Library of Congress. Air Information Division, Dec. 20,1960. 27p. (AID Rept. 60-110) (AD-250 076) 61-15661, $2.40 mi, $4.80, ph.

Annotated references covering the period 1957 through 1960 number 109. All are from USSR publications.

SPACE SCIENCE

483. Psychological and social problems of man in space. A literature survey.
B.D. Goodman. Santa Monica, Calif., Systems Development Corp., Mar.2, 1961. 67p. (Field Note FN-5220) (AD-252 434)

Purpose of this bibliography of 190 references is to bring together the reports, books, and periodical articles published through January 1961. The area covered includes social and sensory isolation, psychological assessment and training, fatigue, confinement, performance under stress, work schedules, motivation, weightlessness disorientation, emotional stability and the day-night cycle.

484. Satellite environment handbook.
F.S. Johnson, ed. Sunnyvale, Calif., Lockheed Aircraft Corp., Missiles and Space Division, Dec. 1960. 164 p.

Includes 121 references related to physical properties of the upper atmosphere, ionospheric structure, penetrating particle radiation, solar radiation, micrometeorites, radio noise, thermal radiation from the earth, and geomagnetism.

485. Selected references on the legal problems of space exploration.
K.A. Finch. In Legal Problems of Space Exploration. A Symposium, Prepared for the Use of the Committee on Aeronautical and Space Sciences, United States Senate, by the Legislative Reference Service, The Library of Congress, p.1320-1392, Washington, D.C., U.S. Govt. Print. Off., 1961. (Senate Doc. 26, U.S. Congr. 87th, 1st Sess.).

This bibliography was compiled in the International Affairs Division, Directorate of Civil Law, Office of the Judge Advocate General, Department of the Air Force.

486. Temperature control of satellite and space vehicles. An annotated bibliography.
Sunnyvale, Calif., Lockheed Aircraft Corp., Missiles and Space Division, Feb. 1961. 32p. (Special Bib. SB-61-5)

Methods and systems for maintaining vehicles within tolerable temperature bounds while operating outside planetary atmospheres are included as are discussions of the temperature environment in space and how it

might affect vehicle operation. References are annotated and number eighty-eight.

ULTRASONICS

487. Literature search on ultrasonics in welding and other ultrasonic joining processes.
G.I. Chandler. Downey, Calif., Autonetics, Apr.15,1960. 28p. (Rept. EM-6059) (AD-242 215)

The 95 references in this bibliography are representative of the existing literature on ultrasonics in soldering, brazing, and welding processes. The abstracts are arranged by primary author under the year of publication and are followed by an author index. The literature search includes data from 1950 through March 1960.

488. Physics of ultrasonics and hypersonics in solids. An annotated bibliography.
Sunnyvale, Calif., Lockheed Aircraft Corp., Missiles and Space Division, Sept. 1960. 96p. (Special Bib. SB-60-9) (AD-252 351)

Bibliography covers ultrasonic and hypersonic radiation ranging from several megacycles to above 1000 Mc; its generation, detection, and propagation in solids. 193 references with descriptive notes.

498. Ultrasonic welding. An annotated bibliography.
Maureen A. Pearcy. Sunnyvale, Calif., Lockheed Aircraft Corp., Missiles and Space Division, Feb., 1961. (Special Bib. SB-61-2) (AD-252 855)

58 annotated references on the application of ultrasonic vibrations to the welding of various metals.

WOOD

490. Progress in wood drying—1960.
Eric L. Ellwood. FOREST PROD.J. 11: 55-66, 1961.

An illustrated review with 223 reterences covering progress in all parts of the world.

491. Recent progress toward an understanding of the physical and mechanical properties of wood.
R.L. Youngs. FOREST PROD.J. 11:214-225, 1961.

The 356 references refer to work published in 1955 or later.

492. Review of chemical utilization (of wood).
Irwin A. Pearl and John W. Rowe. FOREST PROD.J. 10:91-112, 1960.

A review of 658 references of progress in using everything "except the rustle of the leaves."

493. A review of progress in chemical conversion (of wood).
John W. Rowe and Irwin A. Pearl. FOREST PROD.J. 11:85-107, 1961.

This review with its 658 references follows the one by Pearl and Rowe issued a year previously. It presents complete literature surveys on bark, lignin, and extractives as well as sections on pulping, charcoal, and wood hydrolysis.

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Also for the time being AVN helps out with an occasional abstract.

ABSTRACTING AND INDEXING

260. ASLIB Cranfield Research Project. Report on the first stage of an investigation into the comparative efficiency of indexing systems.
C. W. Clevedron, Cranfield, Eng., College of Aeronautics, 1960. 166 p. No. price.

Reviewing by G. Jahoda in COLL. & RES. LIB. 22 (3): 228. May 1961. Indexing systems Studied: Universal Decimal Classification, & alphabetic subject catalog, facted classification scheme & Uniterm system of coordinate indexing. —DBS

261. Automatic syntax analysis in machine indexing and abstracting
W. D. Climenson, N. H. Hardwick and S. N. Jacobson. AM. DOCUMENT. 12 (3): 178-183 July 1961.

Describes syntax analysis program & some of techniques which have been studied for its use in natural language processing. —MEM

262. Better indexes for technical literature.
ASLIB PROC. 13(4): 89-111 April 1961 Proceedings of the conference arranged by Aslib and the Society of Indexers. London, January 31, 1961.
MOANS BY A USER by J. F. Hinsley, pp 90-95; A PUBLISHER'S VIEW by A. K. Parker pp 96-101; THE TECHNIQUE OF INDEXING BOOKS by W. J. Bishop pp102; TECHNIQUES OF INDEXING PERIODICALS by G. C. Jones, pp 103-106; AUTOMATION IN INDEXING by C. W. Cleverdon, pp 107-109; and SUMMING UP AND CONCLUSIONS by L. E. J. Helyar, pp 110-111.

263. A computer analysis of the Merck Sharp & Dohme Research Laboratories indexing system.
C. K. Schultz and C. A. Shepherd. AM DOCUMENT 12(2):83-92 April 1961.

Analysis of indexing terms of 10,000 documents to determine frequency of use of indexing terms, both singly & in combination with one another. —MEM

264. Computer indexes documents by significant title words.
ELEC. ENG. 80 (8): 656 Aug. 1961.

Short item in section, "Of Current Interest" discusses permuted index in Bell Laboratories system of indexing. —AVN

265. Costs of an abstracting program.
J. W. Mohlman, J. CHEM. DOCUMENT 1(2):64-67 July 1961.

Cost study of abstracting program of American Oil Co. reveals that 15,000 abstracts annually would cost $110,000 annually. —AVN

266. The information of abstracts by the selection of sentences. Part I. Sentence selection by men and machines.
G. J. Rath, A. Resnick and T. R. Savage. AM DOCUMENT. 12(2): 139-141 April 1961.
Part II. The reliabillty of people in selecting sentences.
A. Resnick. Ibid. 141-143.

Experiment to compare reliability of human selection of representatives sentences to form abstracts versus machine methods for auto abstracting. —MEM

267. Indexing scientific progress by computer.
G. M. Dyson NEW SCIENTIST (228): 819-20 Mar. 30 1961.

Discussion of how indexes prepared by computer can help scientist to keep abreast of scientific progress. —AVN

268. Lack of indexes in reports of conferences.
C. W. Hanson and Marian Janes, J. DOCUMENT. 16(2): 65-70, June, 1960.

Study showed that half of reports reviewed lacked in-

dexes & rather more than half lacked subject indexes. Provision of indexes greatly increase value of reports. —RJH

269. The manipulation of nonconventional indexing systems.
F. R. Whaley. AM DOCUMENT. 12(2): 101-107 April 1961.

Describes differences between two types of nonconventional indexing systems: scanning systems & collating systems. —MEM

270. Notes on the use of roles and links in coordinate indexing.
M. Taube. AM DOCUMENT. 12(2):98-100 April 1961.

Paper concerned with showing that whereas use of roles can eliminate "noise" without loss of information, use of links may eliminate "noise" only by eliminating useful information. —MEM

271. Some reader reactions to abstracts bulletin style.
B. H. Wiel, J. CHEM. DOCUMENT. 1(2)52-58 July 1961.

Discusses the need for specially-oriented abstract bulletins in industrial organizations. Practical suggestions on abstracting, bulletin format & reader satisfaction are features. —AVN

272. Some solutions to operational problems in concept coordination.
J. C. Costello, Jr. AM. DOCUMENT. 12(3): 191-197 July 1961.

Discusses intellectual & human considerations which determine system efficiency & output quality of coordinate indexes. —MEM

273. Some suggested mechanized indexing investigations which require no machines.
J. O'Connor. AM DOCUMENT. 12(3). 198-203 July 1961.

Describes some simple investigations on possibilities om mechanized indexing. —MEM

BIBLIOGRAPHY

274. D.S.I.R. Library publication.
CHEM. AND IND. 1075 1961.

National Lending Library for Science & Technology of D.S.I.R. has recently published list of Irregular Serials received from U.S.S.R. & Bulgaria. —HO

275. The engineers' bookshelf.
R. M. Koff, PROD. ENG. 32(27):25-40, July 3, 1961.

Third edition of extensive bibliography of technical books for design engineer. Books on statics & dynamics have been dropped & more books published since June 1, 1959 have been included. —RJH

276. Heat bibliography.
CHEM. AND IND. 981, 1961.

This classified bibliography prepared by (British) National Engineering Lab. is available from HMSO for 20's, & contains over 4000 references. —HO

277. Index of chemistry films.
CHEM. AND IND. 1075, 1961.

Review of second edition of above work. —HO

278. The lawyer in the library; a short account of English legal literature.
Derek J. Way. LIB ASSN. REC 63:236-242 July 1961.

Article includes account of method of citation for British laws. —SJK

279. Maintenance and maintainability. An ASTIA report bibliography.
Attachment to Office of Defense Research and Engineering MENEX (PB 171,518): thru U. S. GOV'T RESEARCH REPORTS 35 (5) 533 (1961).

Arrangement is described which will permit the user to follow continuity of research completed by given activity & will provide approach for reviewing future reports through use of source index in ASTIA's Cumulative Index. —BC

280. Medical dictionaries and studies of terminology.
E. G. Mosely. BULL. MED. LIB. ASSOC 49, 374-95, 1961.

Annotated useful list, principally of works published since 1955, selected from holdings of NLM. —HO

281. National medical bibliographies.
G. N. Schiffmann. BULL. MED. LIB. ASSOC. 49, 411-22, 1961.

Current alphabetical by country (21) list of 34 such bibliographies being published on continuing basis.—HO

BOOK TRADE

282. Author and publisher.
D. Richter, NATURE, 191(4784): 131-2, July 8, 1961.

Review of discussion on problems arising in connection with publishing scientific books in England. Ownership of copyright & contractual relationships are covered. —RJH

283. Blackwell's.
J. Blackwell. CHEM. AND IND. 890-1, 1961.

Brief account of bookshop founded in 1879. Weekly book & periodical information service has recently been developed. —HO

CATALOGING AND CLASSIFICATION

284. Cataloging rules and practice: further charges at University College London.
A. E. Tooth, J. DOCUMENT., 16(2):71-79, June, 1960.

In 1956 some drastic changes were made in cataloging rules at university. Experience has proved that changes in cataloging rules can be made without disturbing readers at all. —RJH

285. Prime-number coding.
E. Lamm. AM DOCUMENT. 12(3): 172-177 July 1961.

Presents way of combining or intersection classes in classification scheme that maintains impartiality among classes.

286. The principles of cataloging.
L. Jolley. London, Crosby Lockwood & Son. Ltd. 1960. 137 p. 15s.

Reviewed by O. Mahoney in COLL. & RES. LIB. 22 (3): 277. May 1961. ". . . For all serious students of cataloging it should be required reading." —DBS

287. Recataloging.
M. R. MacDonald. BULL MED. LIB. ASSOC., 49, 426-33, 1961.

Poor records serve poorly. MacDonald looks forward not back, & gives hints on easing difficulties in transition when overhaul is required. She advocates periodic compartmentalization of catalog & collection by date, as well as divided catalog. —HO

288. Shelf list as union catalog.
D. Coney and G. Piternick. COLL. & RES. LIB. 21(3): 193-194. May 1961.

Publication in book form of shelf lists of seven Univ. of Calif. libraries to provide optimum intercampus access to their collections. Author (main entry) & subject printed catalogs also covered. —DBS

COOPERATION BETWEEN LIBRARIES

289. Hertfordshire County Council Technical Library and Information Service.
Gordon H. Wright, J. DOCUMENT. 16 (4):190-202, December, 1960.
Description of technical library services offered by this country library. Particularly interesting is report of services to industries in county. —RJH

290. Interlibrary loans.
R. K. Hagedorn. SLA S. CALIF. CHAP. BULL. 22(3): 19,21,23 March 1961.
Summarizes comments of several college & university librarians received by the editor of the Bulletin. Stresses that borrowers should follow General Interlibrary Lending Code, 1962. —SK

291. Interlibrary loans in British universities.
A. G. Mackenzie, J. DOCUMENT. 16(2): 41-64, June, 1960.
Study of interlibrary loan matters brings about suggestions for improvement in line of staff, administration, education of requester, postage, renewals & use of photocopies in lieu of loans. —RJH

292. The National Reference Library for Science and Technology.
NATURE, 191 (4783): 1-3, July 1, 1961.
Editorial on formation & progress of library. Some ideas on relation with library & British Museum may be applied to other interlibrary relationships. —RJH

DOCUMENTARY REPRODUCTION

283. Acifilm in action.
R. E. Jones. AM DOCUMENT. 12(3): 222-223 July 1961.
Describes the use of Acifilm, unilized microfilm system. in reducing space required for filing documents. —MEM

294. Comunication engineering approach to microforms.
L. B. Heilprin. AM DOCUMENT. 12(3): 213-218 July, 1961.
Surveys from engineering viewpoint why microfilms have evolved as they have & directions & new degrees of freedom they are assuming.

295. Curbs on library photocopying proposed.
CHEM. ENG. NEWS 39(33):37 Aug. 14, 1961.
Copyright Office of Library of Congress in report titled "Copyright Law Revision" recommends that law should be changed to permit libraries whose collections are available to public without charge to make single copies of copyrighted material, but that publishers make contracts with industrial firms giving them blanket authority to make photocopies on payment of royalty. —AMC

296. The halftone process puts pictures in duplicated material.
R. E. Goode and J. B. Cooper. REPRODUCTION METHODS FOR BUSINESS AND INDUSTRY 1(3):22,24, 58 July-Aug. 1961.
Describes methods for putting halftone illustrations into duplicated reports. —MEM

297. An introduction to cold type.
REPRODUCTION METHODS FOR BUSINESS AND INDUSTRY 1(3):50-55 July-Aug. 1961.
Basic information on methods, equipment & applications of cold type for reports, flip charts, slide presentations, etc. —MEM

298. Japanese designers make solid progress with new business machines.
PROD. ENG. 32(28):15-16, July 10, 1961
Pictures & description of some new copying machines & office machines displayed at Tokyo's 22nd annual business show. —RJH

299. New copying system does it with "selective distillation".
PROD. ENG. 32(27):7 July 3, 1961.
Description of copying system in which oil is distilled by infrared from master to copy. Oil serves to attract & hold ink that reproduces image. —RJH

300. New photocopying method by A. Games reported in British press.
G. Ashton. REPRODUCTION METHODS FOR BUSINESS AND INDUSTRY 1(3):10,15 July-Aug. 1961.
Describes new dry office copying system invented in England being commercially developed. —MEM

301. The slide as a visual aid.
Vogt. Ralph E. STWP REV. 8(3) 4-7 July 1961.
Idea content, slide size, line weight & lettering, size & proportion of image, use of color, projection facilities & seating of viewers for production of slides to accompany technical messages are given. —MB

302. Spirit carbons and duplicators.
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Table giving sheet size, suggested run, price, etc. on 16 brands of carbons for spirit duplication; & capabilities & approximate costs of 15 makes of automatic & manual spirit duplicators. —MEM

303. The use of the Filmsort card in industry.
G. T. McMahon. AM. DOCUMENT. 12(3)219-221 July 1961.
Describes use of microfilm & Filmsort cards to alleviate "blueprint bottleneck." —MEM

DOCUMENTATION RESEARCH

304. Chemical names have been directly translated into molecular formulas.
CHEM. ENG. NEWS 39 (34):35 Aug. 21, 1961.
Institute for Scientific Information, Philadelphia, has worked out & is using recognition grammar stored on magnetic tape for use in computer. Operator types out chemical name, within four or five seconds machine prints out molecular formula. —AMC

DOCUMENTATION—GENERAL

305. Classified Patent Search Files, A Proposed Base for Technical Information Centers.
Newman, Simon M. J. PAT. OFF. SOC. 43, (6): 418-434 (1961.
Methods have been considered by which Patent Office search files, at present available to public only in Washington, might form basis for number of search centers at locations in other parts of country. First step in such decentralization of patent search was issuance, during past year, of Patent Office subclass lists on microfilm. —BC

DOCUMENTATION RESEARCH

306. Comparisons of four types of lexical indicators of content.
G. J. Rath, A. Resnick and T. R. Savage.
(Continued on Page 145)

The free world finds itself committed
to strong defense,
yet yearning for peaceful pursuits
as embodied in space-age exploration.
An example is the DYNA-SOAR,
whose space booster is under development
by The Martin Company in Baltimore.
The tiny glider on the nose of
the modified TITAN II booster will
orbit a man around the earth.
The TITAN ICBM
is a mighty deterrent in war,
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AM. DOCUMENT. 12(2): 126-130 April 1961.

Experiment to determine which of four types of lexical indicators of content could be utilized best by subjects to determine relevant from irrelevant documents & to answer set of 100 questions. —MEM

DOCUMENTATION—GENERAL

307. Computer techniques for an old English concordance.
J. B. Bessinger. AM DOCUMENT. 12-(3):277-229 July 1961.

Describes use of I.B.M. 704 in preparing a concordance to THE ANGLO-SAXON POETIC RECORDS. —MEM

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J. L. Jolley, J. DOCUMENT. 16(3): 132-143, September, 1960.

Short study of behavior of cards as data vehicles, related to forms of classification available to types of questions with which they may have to deal. —RJH

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M. Rigby. METEOROL. ABS. & BIB. 12(1):ii-iii January, 1961.

Preview of potential documentation services by this journal during next decade. —RLS

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J. W. Stein. COLL. & RES. LIB. 22 (3): 195-198. May 1961.

Explores books vs. machines—as teaching mechanism with book apparently coming out on plus side. —DBS

311. National Science Foundation Information Plans.
CHEM. ENG. NEWS 39 (24): 78 June 12, 1961.

NFS supports joint NAS-NRC study of chemical notation systems, specialized information searches in Chem. Abs., & publication of reports on "Science Information in Latin America," & "Science Information Personnel," & has issued ninth bulletin on series "Scientific Information Activities of Federal Agencies." —AMC

312. Storage and retrieval of biological information.
Dr. G. C. Ainsworth, NATURE, 191 (4783): 12-14, July 1, 1961.

Excellent article on biological literature. Problem of rapid retrieval of new information & retrieval from past are considered. Should be read by all Biological Science librarians. —RJH

313. Thesaurus—a new word on Documentation.
B. C. Vickery, J. DOCUMENT. 16(4): 181-189, December, 1960.

Review of current usage of word "thesaurus" in documentation, concluding that we must either restrict word to tools aiding documentalists to pass from text-words in natural language to key-words or codes in regularized language or we must allow it to be used to mean any linear list displaying relations between words.—RJH

INFORMATION STORAGE AND RETRIEVAL

314. Automation and its implication, 1956-1960 (a selected bibliography)
B. F. Downey. LIB SERVICE TO LABOR. 13(4): 1-8 Spring 1961.

Bibliography on subject of automation.

315. The Automation of General Semantics.
Householder, F. W. Jr. and J. Lyons, (PB 155,356): thru U. S. GOV'T RESEARCH REPORTS 36 (2) S-79 (1961).

316. Development of a technical thesaurus.
B. E. Holm and L. E. Rasmussen. AM DOCUMENT. 12 (3): 184-190 July 1961.

Discusses need for thesaurus, mechanics of its development & use in solving the language problems of information system. —MEM

(See Letters to Editor)

317. Dynamic information service.
D. Rife. SLA GEORGIA CHAP. BULL. 5(2): 3-4 March 1961.

Deals with information service in technical library.—SK

318. The historical development and present state-of-the-art of mechanized information retrieval systems.
C. P. Bourne. AM DOCUMENT. 12(2): 108-110 April 1961.

Reviews last ten years of equipment development & the application of mechanization techniques for punched-card systems, computer systems & magnetic media systems. —MEM

319. An IBM card indexing system for literature references.
R. A. Bonham, F. A. Momany and M. L. Druelinger J. CHEM. DOCUMENT. 1(2) 76-77 July 1961.

Use of IBM punched cards for compiling abstracts on molecular structure. Work is being carried out at Indiana U. —AVN

320. IBM system conducts literature search in seconds.
PROD. ENG. 32(31): 19 July 31, 1961.

Short description of WALNUT, new information retrieval system developed by advanced Systems Development Division of IBM, San Jose, California. System can store & retrieve pages of documents. —RJH

321. IBM system speeds information flow.
CHEM ENG. NEWS 39(29): 37 July 17, 1961.

IBM has developed for CIA retrieval system, called Walnut, which has random-access searching of reduced microfilms, capacity 100 million pages. Search yields aperture card holding films of desired documents.—AMC

322. The inadequacy of varying the depth of indexing and other "document collection" approaches to information retrieval for researchers.
R. Manly. AM DOCUMENT. 12 (3): 204-205 July 1961.

Stresses that researcher usually wants to find what pertinent work exists anywhere on his problem & not what is available in a specified collection only. —MEM

323. Information retrieval.
CHEM. ENG. NEWS 39 (29): 102-110, 112, 114 July 17, 1961.

Retrieval devices for scientific literature are classified as simple manual devices. Input is still largely manual, but computers can be programmed to carry out standardized indexing of synonyms, relating to specific & generic terms, & research on mechanical indexing is progressing. —AMC

324. Information retrieval—a solution.
B. E. Holm. CHEM. ENG. PROGR. 57-(6):73-78 June, 1961.

In new A.I.Ch.E. program for retrieving technical literature, publisher will edit absetrac & list of key words

supplied by author, adding generic & related terms in accordance with Thesaurus of Chemical Engineering Terms, & will assign link & role indicators. —AMC

325. Information retrieval answers your question.
CHEM. ENG. 68(15): 68,70 July 24, 1961.

At Western Reserve U's Center for Documentation & Communication, pilot studies for services to Am. Diabetes Assn. & U. S. Dept. HEW similar to that now provided for ASM are "gathering steam." —AMC

326. Information Retrieval at the Naval Weapons Laboratory Missile Safety Information Center.
Turner, R. C. Jr., Naval Weapons Lab., Dahlgren, Va. (PB 152,978 thru U. S. GOV'T RESEARCH REPORTS 35 (4) 479 (1961).

Report defines categories of information used in cataloging publication & discusses Information Retrieval Function: (a) Determining Search Code, (b) Requesting Search, (c) Research Results. —BC

327. Information Retrieval Study.
O'Connor, John, Institute for Cooperative Research, U. of Penn. (PB 153,770): thru U. S. GOVT RESEARCH 35 (4) 479 (1961). —BC

328. "Information storage and retrieval" and the problems of libraries.
V. W. Clapp. AM DOCUMENT. 12 (3): 224-226 July 1961.

Reviews progress toward solution of problems of information storage & retrieval since establshment of Council on Library Resources in 1956. —MEM

329. Is mechanical handling of microfilm aperature cards practical?
A. D. Even. REPRODUCTION METHODS FOR BUSINESS AND INDUSTRY 1 (3): 56-57 July-Aug. 1961.

Discusses many factors pro & con mechanical sorting of microfilm aperture cards vs. manual handling of full size paper reproducible prints. —MEM

330. Monsanto Chemical Company — inorganic research system.
M. D. Madden. SLA GREATER ST. LOUIS CHAP. SLATE. 20 (3) 7-12 Jan. 1961.

Describes recent improvements in library, notably patent file on detergents, use of IBM punched cards in information retrieval. —SK

331. On information retrieval (letter to the editor).
R. Cushing. CHEM. ENG. PROGR. 57 (8):23-24 Aug. 1961.

A. I. Ch. E. is complimented on its approach to documentation. Author uses same system, except that instead of using role-indicators & interfiling, he makes separate file for each role. He recommends that abstracts be printed "on perforated 3x5 cards like readers' service cards." —AMC

332. On information retrieval (response to letters to the editor).
CHEM. ENG. PROGR. 57(8):26 Aug. 1961.

In future issues bibliographic reference will be included in printed abstracts. To print perforated 3x5 cards would cost too much. Subscription service providing cards for all articles in A. I. Ch. E. journals is possibility. —AMC

333. Pitfalls of information retrieval.
Harold S. Sharp. INDUS. RES. 3(2)33-37 (Apr.-May 1961).

General review of various mechanical & non-mechanical information retrieval systems presently in use. Limitations & advantages of each are noted. Point is made that library research is less expensive & time consuming than repeated laboratory research. —REB

334. Practical information handling.
John W. Murdock and Gustavus B. Simpson, Jr. INDUS. RES. 3(2)41-43 (Apr.-May 1961)

Describes effort being made at Battelle Memorial Institute to provide information retrieval system which is capable of qualitative approach. System is non-mechanical, utilizes "clue words" in context & provides abstract immediately rather than solely reference to further information. —REB

335. Report index searching on the Bendix G-15D computer.
J. D. Grandine, E. M. Starr and R. E. Putscher J. CHEM. DOCUMENT. 1(2): 79-83 July 1961.

"An experimental system has been developed for the mechanized searching of a subject index . . . " System involves searching of edge-punched cards on digital computer. —AVN

336. The role of microfilm in managing a stockpile of necessary data.
V. Tate. PHOTO METHODS FOR INDUSTRY 4(7):62, 64,66-67 July 1961.

Describes several methods of high-speed microfilm data searching. —MEM

337. Seeking new ways out of the literature clutter.
CHEM WEEK 89 (1): 75-76, 78, 80 July 8, 1961.

Brief description of new methods equipment. Estimates of savings from efficient information retrieval vary widely. —BL

338. Selective dissemination of new scientific information with the aid of electronic processing equipment.
H. P. Luhn. AM DOCUMENT. 12(2): 131-138 April 1961.

Describes service system for machines assisted dissemination of new information in which new document is characterized by vocabulary or pattern of keywords which is then compared with the vocabulary or profiles characterizing participants of service &, where similarity exists, participants are notified by card carrying abstract. —MEM

339. The Senate committee on government operations and documentation.
W. L. Reynolds. AM DOCUMENT. 12 (2):93-97 April 1961.

Discusses work of committee & proposed legislation aimed at improving information processing programs. —MEM

340. Some thoughts on the information problem.
John C. Costello, Jr. MATERIALS RESEARCH AND STANDARDS (ASTM) 1(6)474-76; 481 (June 1961.

Primarily devoted to analysis of "concept coordination" as new technique (as opposed to classification or sub-

ject cataloging) of information storage & retrieval. Some attention is given to selecting right kind of information system for any research or development organization. —REB

341. Special considerations of the individual as a user, generator, and retriever of information.
D. C. Engelbart. AM. DOCUMENT. 12 (2): 121-125 April 1961.

Discusses system author developed for storing & retrieval information closely related to his research project in his personal file & need for further development of system with similar purpose. —MEM

342. Storage and retrieval of chemical research and patent information by links and roles in Du Pont.
J. P. Costello, Jr. AM DOCUMENT. 12 (2): 111-120 April 1961.

Discusses coordinate indexing system developed to index internal research & development reports.—MEM

343. Studies in information storge and retrieval; on the use of Godel indices in coding.
R. C. Buck. AM DOCUMENT. 12(3): 165-171 July 1961.

Discusses problem of developing mechanized indexing system for mathematical literature. —MEM

344. A Survey of Computer Programs for Chemical Information Searching.
Marden, Ethel C. and Herbert R. Koller, National Bureau of Standards, Washington, D.C. (PB 161,586): thru U. S. GOVT. RESEARCH REPORTS 35 (4) 479 (1961).

Twelve computer systems for searching chemical literature are described. —BC

345. A table look-up machine for processing of natural languages.
J. L. Craft, E. H. Goldman and W. B. Strohm. IBM JOUR. RESEARCH DEVELOP. 5(3): 192-203 July 1961.

Table look-up machine based upon photographic memory allows look-up of phrases regardless of length. Linguistic determinations based on information retrieval govern subsequent operations. Sentence buffer holds sentence long enough to make backward & forward passes required for contextual analysis. —MCP

346. U. S. organizations, particularly in the chemical field, use advanced information retrieval on expanding scale.
CHEM. ENG. NEWS 39(30):90-96, 98, 100 July 24, 1961.

Many large chemical companies & government agencies, including Patent office & ASTIA, have set up large scale IR systems, in many cases characterized by use of computers & of information specialists. Information centers sponsored by societies & by government agencies serve specialized areas. —AMC

LIBRARY ADMINISTRATION

347. National Reference Library of Science and Invention.
J. DOCUMENT. 17(1): 1-39, March, 1961.

Symposium on new library with papers by R. S. Hutton, E. M. Nicholson, Maysie Webb & A. H. Chaplin. History, organization & future of library are discussed. —RJH

348. A recent look at university libraries in Italy.
R. W. Vosper. COLL. & RES. LIB. 22 (3): 199-210. May 1961.

Based on author's research in Italy as Fulbright lecturer. Statistics on size of student bodies, book collections, number of readers, hours of service are included as well as finances, staffing. Plans for new building of National Central Library in Rome mentioned. —DBS

LIBRARY EDUCATION AND TRAINING

349. The case for a new profession embracing science, librarianship and foreign languages.
NATURE, 191(4787): 452-53, July 29, 1961.

Review of survey **Science Information Personnel** by Leonard Cohan & Kenneth Craven commenting on how some recommendations might be put in effect in United Kingdom. —RJH

350. Current instruction in the use of chemical literature.
R. T. Bottle. J. ROY. INST. CHEM. 85:173 May, 1961.

Brief note about survey on teaching of chemical literature & its use in British academic institutions. —RLS

351. Demand and supply of professionally trained librarians in New York State.
Charles M. Armstrong J. EDUC. FOR LIBRARIANSHIP 1(4): 206-16 Spring 1961.

Detailed statistical analysis of shortage of & present & future demand for librarians. Story could well be told in most states.

LIBRARY PLANNING

352. The new periodicals wing of the university of London library.
H. Margaret Gummer and Raymond Catton. J. Document. 17(2): 96-105, June, 1961.

Description of new library wing devoted entirely to periodicals & organization of periodicals department of library. —RJH

353. Planning the college and university library buildings: A book for campus planners and architects.
Ralph E. Ellsworth. Boulder, Colo., The author, 1961. 102 p. $5.00.

Reviewed by W. H. Jesse in COLL & RES. LIB. 22(3): 225. May 1961. —DBS

354. Selection of library sites.
K. D. Metcalf. COLL. & RES. LIB. 22 (3): 183-192,222. May 1961.

Represents preliminary version of chapter in projected volume by Mr. Metcalf on planning of library buildings. Study is sponsored by ACRL & Assoc. of Research Libraries, & supported by grant from Council on Library Resources. DBS

PROFESSIONAL ASSOCIATIONS AND SOCIETIES

355. Concerning conferences.
Alexander King, J. DOCUMENT. 17(2): 69-76, June, 1961.

Main functions of international conferences are: (1) announcement of new knowledge; (2) exchange of information & experience; (3) education; (4) formulations of problems & situations; (5) fact finding & reporting; & (6) negotiations & policy formation & (7) status & ceremonial. —RJH

356. Scientific and technical documentation in chemistry.
CHEM. AND IND. 1058, 1961.
Notice of meeting to be held in Milan, Italy Nov. 9-10, 1961 under auspices of IUPAC & Fed. of Sci. & Tech. Assocs. of Milan. —HO

SPECIAL LIBRARIES AND INFORMATION SERVICES

357. Can a company library save: money? time? work?
MANAGEMENT METHODS 20 (3):52-56, 94-95 June 1961.
Gives reasons why library is necessity & details on how to set one up & staff & costs involved. —MEM

358. The Development of Special Libraries for American Business and Industry.
Kruzas, Anthony T., Ph.D. Thesis, University of Michigan, 1960. thru DISSERTATION ABSTRACTS 21, (8) 2303 (1961).
Analytical historical survey of special libraries in United States with primary emphasis on development of libraries for business & industrial firms. —BC

359. The hub of the CBC: its film library.
IND. PHOT. 10(7): 43-44 July 1961.
Describes some of activities of Canadian Broadcasting Corp.'s film library. —MEM

360. Information needs of the multi-national coporation.
D. E. Lilienthal. SLA COUNCIL PHILA. & VICINITY BULL. 28(2):13, 20-3.
Describes research needs of American firms with operations in other countries. —SK

361. Johnson Wax Library, Racine, Wisconsin.
SLA WISC. CHAP. BULL. 31(1): 11 Oct;Dec. 1960.
Brief description of company library & note of its recent expansion to serve all divisions of parent organization. —SK

362. Library public relations from four viewpoints.
J. Malcolm and others. SLA GREATER ST. LOUIS CHAP. SLATE. 20(5): 6-12 May 1961.
Describes public relations in special, medical & public library viewpoint. —SK

363. McDonnell Aircraft Corporation Engineering Library.
J. R. Graham. SLA GREATER ST. LOUIS CHAP. SLATE. 20(4):7-11 March 1961.
Description of library, its organization & indexing systems. —SK

364. National Bureau of Standards library
S. A. Jones. D. C. LIB. 32(1): 7-10 Jan. 1961.
History & description of organization of NBS library. —SK

365. The needs of the humanities.
D. J.Urguhart, J. DOCUMENT. 16(3): 121-131, September, 1960.
Thoughts on library & documentation needs of humanities are presented. Difference between scientific & humanities literature is pointed out. —RJH

366. Parke, Davis research library
G. Losie. SLA BIOL. SCI. DIV. REMINDER 19(3): 29-30 April 1961.
Description of library, including its design & function. —SK

367. Unknowing duplication in research — perennial tragedy.
Humphrey, Hubert H. STWP REV. 8(3) 2, 28, 30 July, 1961.
Federal Government is spending $9 billion dollars a year for scientific research, development, testing & evaluation. Unknown duplication has been variously estimated as from 10% to as high (in development work) as 50%. Reliable information systems must be established & fully utilized to reduce this duplication. —MB

368 Whippany library, Bell Telephone Laboratories.
L. F. Wagner. SLA N. J. CHAP. BULL. 26(2): 13-15 Nov. 1960.
Description, with plan, of new library occupied in August, 1960. —SK

TECHNICAL PROCESSES

369. Automatic copying of literature searches.
Betty Sue Gray J. CHEM DOCUMENT. 1(2):71-73 July 1961.
Application of automatic typewriter to literature searching can save appreciable amount of time. Punched paper tape can be made simultaneously with reference cards. AVN

370. Evolution — not revolution.
L. J. Kiersky and F. E. McKenna. SLA N. J. CHAP. BULL. 26(4): 29-31 Feb. 1961.
Tables of Contents Bulletin & method of catalog card reproduction as employed at Air Reduction Company, Inc. Offset process has been used throughout. —SK

371 How to file it efficiently.
R. W. Carson, PROD. ENG. 32(24): 74-75, June 12, 1961.
Before you can set up efficient file you should first determine: Content, order, access time & final dispostion —in that order. —RJH

372 Report numbers—boon or bugaboo.
W. M. Richardson. SLA RIO GRANDE CHAP. BULL. 4(2): 3-5 Sept. 1960. Also in Sci. Tech News 15:5-6, 9, Spring 61.
Discusses advantages & disadvantages of using report numbers for ordering, accessioning & locating. Advocates use of official number where possible. —SK

373. Weeding or discarding program of the U. S. Naval Avionics Facility Library.
E. Burton. SLA INDIANA CHAP. SLANT 23(7):6,8 May 1961.
Describes weeding program for books, monographs, technical reports, etc. —SK

TECHNICAL WRITING & EDITING

374. Digesting for a multicompany management audience.
J. C. Lane J. CHEM. DOCUMENT. 1 (2): 59-63 July 1961.
"Digests" of technical literature as opposed to abstracts. Step by step outline of how to produce digest bulletin. —AVN

375. The dictionary as a writer's tool.
Lytel, Allan STWP Rev. 8(3) 19-22 July 1961.
Merrian-Webster, Funk & Wagnalls, & Oxford diction-

aries are described & historical background of each is given. —MB

376. Is your drafting room manual readable?
Dr. S. W. Brossman, PROD. ENG. 32 (23): 57-60., June 5, 1961.

When preparing a manual ask yourself:
1) Can it be said with fewer words?
2) Is this explanation necessary?
3) Does this belong in manual?
4) Will illustration explain this better?
5) Is material logically organized? —RJH

377. Scientific thinking and scientific writing.
E. N. Abrahard. CHEM. AND IND., 1073-4 1961.

(Review of a book by M. S. Peterson, Chapman and Hall, 1961) —HO

378. "Style guide for chemists"
A. G. Long. CHEM. AND IND. 787, 935, 1961.

Letters advocating ridding English composition of defects & absurdities (quiddities of spelling; Divine Right of Nouns & Immaculate Conception of Instransitive Verbal Virgins) in favor of common sense or colloquial usage. —HO

TRANSLATION

379. The Russian transcription of Chinese names.
C. G. Allen, J. DOCUMENT. 16(2):80-91, June, 1960.

Russian-Chinese transliteration table is presented —RJH

USE OF INFORMATION

380. Analytical and Experimental Study of a Method for Literature Search in Abstracting Journals.
Cezarliyan, A. O., P. S. Lykoudis and Y. S. Touloukian, Thermophysical Properties Research Center, Purdue U. (PB 171,478): thru U. S. GOV'T RESEARCH REPORTS 35 (4) 479-80 (1961).

Method for literature searching is described. —BC

381. Classified patent search files, a proposed base for technical information center.
S. M. Newman. AM. DOCUMENT. 12 (3):206-212 July 1961.

Suggests creating pilot center where patent copies would be arranged by their subject matter classification to test feasibility & desirability of search centers at various locations throughout country. —MEM

382. How to listen and remember. Pt. 1. Three simple steps, and why to take them.
E. J. Tangerman, PROD. ENG. 32(23) 61, June 5, 1961.

Three steps to good listening are 1) anticipate speaker's next comment,2) identify elements of what he's saying, 3) make mental summaries. —RJH

383. How to listen and remember. Part II, Ten ways to be a bad listener.
E. J. Tangerman, PROD. ENG. 32(24): 76, June 12, 1961.

Be active listener, not causual listener to lecture, speech or boss' remarks and you will remember more —RJH

FOREIGN BOOKS and PERIODICALS

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SCIENCE-TECHNOLOGY SERIALS

Compiled by
ANDREW S. GLICK, Editor

ADMINISTRATIVE MANAGEMENT
Name changed from OFFICE MANAGEMENT.

ADVANCES IN FLUORINE CHEMISTRY
V.1, 1960, annually, $12.00
Academic Press, New York.

AEROSPACE MANAGEMENT
Name changed from AIRCRAFT AND MISSILES with August issue.

AMATEUR SCIENTIST
V.1., no. 4, Fall 1960, irregularly, $2.00
Science League, Boyds, Maryland.

AMERICAN GEOPHYSICAL UNION. TRANSACTIONS
Subscription price change to $5.00 up from $4.00

ANGEWANDTE CHEMIE,
International edition V.1, no. 1, January 1962, monthly $15.00
Verlag Chemie, Weinheim, Germany.
Will contain review articles from all fields of chemistry, selected papers. Communications from all fields of chemical research, conference reports, selected abstracts of lectures given at important European chemical meetings, and book reviews.

BIOCHEMISTRY
V.1, no.1, January 1962, bimonthly, $13.00
Will focus its attention on all fundamental aspects of the field.

CA-BIOCHEMICAL SECTIONS
V.1, no.1, January 1962, bi-weekly, from $12.50 to ACS members to $25.00 for colleges and universities, and $115.00 to others.
Will cover every paper, patent ,and book devoted to biochemical research, culler from the regular issues of CHEMICAL ABSTRACTS.

CUMULATED INDEX MEDICUS
V.1, no.1, January 1960, new series, annually, $35.00.
American Medical Association, Chicago, Ill. Supersedes the monthly issues.

DSH ABSTRACTS
V.1, no.1, October 1960, quarterly, $8.00
American Speech and Hearing Association, Washington 6, D. C.

GENERAL AND COMPARATIVE ENDOCRINOLOGY
V.1, no.1, April 1961, bimonthly, $18.00
Academic Press, New York
Journal devoted to publication of studies of the cellular mechanisms of hormone action and of the evolutionary and developmental aspects of vertebrate and invertebrate hormonal systems.

GERONTOLOGIST
V.1, no.1, March 1961, quarterly, $5.00
Gerontological Society, Inc., St. Louis, Missouri.
Publication will feature review theoretical, historical artcles and papers dealing with current action programs.

HARWOOD'S MISSILE RESEARCH INDEX
V.1, no.1, August-September 1961, bi-monthly, $12.00 per vol.
Will cover U. S. and Britsh news and opinions on missiles, rockets, space-craft, nuclear fission, and propulsion not readily available to most readers.

INORGANIC CHEMISTRY
V.1, no.1, February 1962, quarterly, $22.00, $11.00 to ACS members.
American Chemical Society, Washington 6, D.C.
Will contain articles in fields ranging from organic chemistry to theoretical physics. Papers will be related in general terms to active research areas of inorganic chemestry.

INTERNATIONAL ABSTRACTS IN OPERATIONS RESEARCH
V.1, no.1, November 1961, monthy, $12.50
Operations Research Society of America, Baltimore 2, Maryland
European and U.S. journals in the fields of business and industry, economics, engineering, management and operations research, mathematics, the natural sciences, psychology, sociology, philosophy, and statistics will be scanned for articles in interest. Abstracts will be in English with full biblographic data.
A new kind of subject matter index based upon "index titles" will be included.

JOURNAL OF ANOMALIES
V.1, no.1, November 1960, quarterly, issues individually priced.
Davis, A. L. 1125 Montview Dr.,
Knoxville 14, Tennessee
Material which has been rejected by standard professional journals because its treatment is not in accord with theory or convention application of theory.

JOURNAL OF GEOPHYSICAL RESEARCH
Subscription price change to $25.00 up from $20.00

JOURNAL OF NEW DRUGS
V.1, no.1, January 1961, bimonthly, $12.50
New York.
Will serve as the central medium for the publication of clinical papers about new drugs or new uses of established drugs and special articles on new drugs, their investigation and appraisal for safety and efficacy.
Carries no drug advertisements.

JOURNAL OF THEORETICAL BIOLOGY
V.1, no.1, January 1961, quarterly, $17.00
London, England.
International periodical publishing original papers in general theories, theories of specific processes or phenomena, theoretical discussions of specific projects and theoretical discussion of methods.

PERIODICAL MONITOR AND ABSTRACT SERVICE
V.1, no.1, July 1961, monthly, $25.00
Pasadena, California.
Presents broad range of abstracted articles in research, design and application in the fields of electronics and instrumentation.
Primary purpose is to present an overall survey of articles of current interest as soon as they appear in journals that are scanned.

PHILIPPINE ABSTRACTS
V.1, no.1, April 1960, quarterly, $2.00
National Institute of Science & Technology
Manila, Philippines.

PROGRESS IN OPTICS
V.1, 1961, annually, $12.00
North-Holland Publishing Co.,
Amsterdam, Holland.
Aims to provide information in the form of review articles about current optical research. Articles dealing with progress in related fields such as electron optics, X-ray structure analysis, microwave antenna design, and radio astronomy. All articles will be in English but the authorship will be international.

RADIOLOGE (DER)
V.1, no.1, April 1961, quarterly, $15.00
Springer Verlag, Berlin, Germany.

SCHOOL LIBRARY JOURNAL
Name changed with 15 September issue from JUNIOR LIBRARIES.

SCIENCE NEWS
V.1, no.1, November 1960, 2 issues, $1.50
Science Publications, Toronto 16, Canada.

NOTICE

MECHANICAL TRANSLATION BREAKTHROUGH IN CHEMISTRY

A significant development in mechanical translation uniting the electronic computer and modern structural linguistics, was announced today by Dr. Eugene Garfield, director of the Institute for Scientific Information, Philadelphia, Pennsylvania.

An algorithm using a newly constructed grammar of chemical nomenclature, developed by Dr. Garfield, is believed to have produced the first successful computer translation of chemical names directly to molecular formulas. Molecular formulas of several hundred randomly selected chemicals were calculated successfully on a Univac I computer, verifying the linguistic analysis and the logic of the program.

This new recognition grammar enables the computer to understand the chemical names fed to it by a typist. In proving the method, a human translator simulated the operations performed by the computer. Based

(See Page 152)

BOOK REVIEWS

HETEROCYCLIC BOOKS, K. Schofield, Chemistry and Industry p. 657-9 (May 20, 1961).

Review of recent introductory books on "Heterocyclic Chemistry" by (1) A. Albert, (2) A. R. Katritzky and J. M. Lagowski, and (3) R. M. Acheson sums them up as valuable 'minor reference volumes'. Each has a novel classified arrangement of its own (Katritzky and Lagowski, for example, group material in chapters based on ring size wherein each follows the pattern of nomenclature and important compounds, ring syntheses, reaction of rings, reactions of substituents, reactions of non-aromatic compounds, while Albert uses Heteroparaffinics, Heteroethylenics and Heteroaromatics, with the latter divided into Pi-Deficient and Pi-excessive types).

Proceedings of the International Clean Air Conference, London, 20-23 October 1959. 290 p. Nat'l. Soc. for Clean Air. London 1960. 30S.

Reviewed by R. Lessing, Chemistry and Industry 547-8 (Apr. 29, 1961). Each of the 5 sections is preceded by a brief review, and all papers are prefaced with useful summaries; discussion is also provided. Needed for international cooperation in organization, and standardization measures is stressed.

Harold Oatfield

WHY AM I INTERESTED? I KNOW THE AUTHOR!

THE SEAS AND THE SUBS. Ed Rees. Duell, Sloan and Pearce, N. Y. Galleys.

After perusing 83 pages of galleys, some rather hurridly, I know that Ed has a book you will want in your library. Here is a summary, in very readable form, of all the activity that finally produced the U. S. S. NATILUS, SSN-571, its nuclear engine, the Polaris missile and everything inbetween. The quotes from Thatch, Rickover, Burke, Raborn and Hayward as well as his interpretation of their actions make it a person to person acount of history. From a technical viewpoint, I would liked to have seen an account of the Navy preference (and reasons) of the water-boiler over the Sodium Graphite Reactor. Ed Rees is an interesting person and so is his book.

—F. G. Bennett IV

LOS ANGELES, FROM MISSION TO MODERN CITY, Remi Nadeau. Longmans, Green & Co., N. Y. 1960.

Popular history of LA, with no punches pulled, politics, money, Hollywood — the works. Remi, a personal friend, comes from a long line of native sons. If you are interested in the smoggy village, be sure to lay your hooks on this book.

If any of you are interested in contributing reports of new books by authors whom you know personally, please forward same to the Editor. —F. G. Bennett IV

SPECIAL LIBRARIES ASSOCIATION
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BUDGET
1961 - 1962

Estimated Income	
Division Allotment	$1600.00
Sci-Tech News	
Subscriptions	135.00
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Total Income	$3585.00
Estimated Expenditures	
Section Allotments	
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Engineering	100.00
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Sci-Tech News Printing and Mailing	$2400.00
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Postage	25.00
Headquarters Envelopes & Mailing	250.00
Convention Expenses	75.00
Contingencies	100.00
Royalties (World List)	50.00
Total Expenditures	$3213.00

(Continued From Page 151)

on the linguistic analysis, it is concluded that the procedure can also be used manually by chemists and to train non-chemist clerks, librarians, and indexers to calculate a molecular formula from a chemical name.

Already hailed by many scientists as a revolutionary breakthrough in scientific documentation and literature retrieval, this new concept of chemico-linguistics promises even greater precision in teaching and understanding chemical nomenclature, translating chemical terminology, and chemical classification.

Under development are similar methods and techniques which have potential application to the problems of analyzing and mechanically translating Russian, Japanese and other exotic languages.

As editor of **Index Chemicus**, the Institute's twice-monthly indexing and abstracting service, Dr. Garfield has already incorporated this technique in the preparation of the publication. "Chemists are preparing over 100,000 new chemical compounds a year, each of which represents hundreds of man-hours of research, and must be indexed rapidly for prompt use by research scientists in such fields as cancer, missiles, and atomic energy," he stated.

He pointed out that more than 50% of the arduous intellectual effort that goes into indexing chemistry is the analysis of chemical names, as well as the recognition of them. This strengthens his belief that the task is most consistently performed by machine.

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THE MAIL BAG

Dear Frank:

Part one of the report of the Committee on Division and Section Structure which appeared in v. 15 no. 2 of SCI-TECH NEWS seems to have swamped the printer. Would you please advise the readers of S-TN to make the following additions and corrections which will facilitate their reading of this report?

P. 109, column 2 center

Underline the name of the Committee—the beginning of the report will be less obscure.

P. 109 to end

For clarity, all section headings and subheadings should be underlined, starting with I. Appointment . . .

P. 111, column 2, lower third

The regions (groups of chapters) envisioned by the committee can be found by noting that there should be separations between:
Ontario and Arizona
S.W. Texas and N.Y.C.
W. Va. and Calif.
Nev. and Mich.
Ohio and No. Car.
Ky. and No. Dak.
Manitoba and Alaska
Alberta and Okla.

P. 112. The caption on column 1 has no bearing and should be obliterated.

P. 112, column 1, recommendation 5.
For royal conferences, read: regional conference.

P. 112, column 2, lines 5-7 should read:
of library and each led, perhaps, by one of the principal speakers. The importance of adequate time for discussion of a professional topic following its presentation cannot be overemphasized.

P. 112, column 2, line 10
for opening, read: open.

(Mrs. Lois E. Godfrey
156 Tunyo

Dear Frank:

An acquaintance of mine, Ravendale Puttidocks Fancy, II.V, saw the recent poem, "To Sonneteers," and felt constrained to reply. He's an odd lad but I thought I would humor hm by sending to you his poetic effort. (The reason he is 2.5 is that he is a Passing Fancy). His poem follows.

"There's no Rule like an Old Rule"
A reply to "To Sonneteers"

We know the world is filled with many fools
Who write, and even put their trash in verse.
Such flatulence is band, but even worse,
Is rhyme engendered without thought of rules.
What craftsman brings forth beauty without tools?
What actor feels that he need not rehearse?
There's form and content lodged in every curse,
And sometimes even wisdom's learned in schools.
I'd rather pen a sonnet that was trite
Than waste my words in some abandoned style.
A shooting-star glows glorious in the night,
But turns to cinders in a little while.
I'll not bow down to a careless, casual song —
I'll use the rules, and build my sonnet strong.

Harold D. Wilson
3219 Hunter Blvd. S.
Seattle 44, Washington

Dear Frank:

John O'Connor of the University of Pennsylvania forwarded your letter of August 17, 1961, to us. We assume your comments and questions are in connection with the paper, "Development of a Technical Thesaurus" by B. E. Holm and L. E. Rasmussen published in American Documentation, Vol. 12, No. 3, July, 1961.

The thesaurus which we developed was based on terms used in indexing reports and similar documents generated within the Du Pont Company. It was designed to meet the needs of Du Pont information system and no attempt was made to "include" or "exclude" any other system of nomenclature, subject headings, or descriptors. Other systems were used in reference and, in fact, the subject headings of Chemical Abstracts as well as many others were reviewed. Since this was developed for our internal use, it is important to realize the Du Pont viewpoints were given preference over normal dictionary values of terms.

The ASTIA Thesaurus is valuable from a standpoint of providing a listing of terms and term relationships. While very little was directly incorporated into our Thesaurus, no useful purpose would be served by criticizing this or any other of our information sources merely because it was not designed from our viewpoint. Each of such tools was developed to satisfy the viewpoints of their primary users.

Yes, we agree that there is a need for a national technical thesaurus. The "Chemical Engineering Thesaurus" published by the American Institute of Chemical Engineers is a step in this direction. It is our hope that other technical societies through such agencies as the Engineers Joint Council will eventually consolidate all of their needs into such a national technical thesaurus.

Very truly yours,
ENGINEERING SERVICE DIVISION
E. I. Du Pont de Nemours & Co.
L. E. Rasmussen

Dear Frank:

I was pleased that SCI-TECH NEWS reprinted the description of "New Catalog Cards" which appeared originally in the February, 1961 issue of the NEW JERSEY CHAPTER BULLETIN.

You should also have acknowledged the author of the original article and her library. The description of the catalog cards in the NEW JERSEY CHAPTER BULLETIN was written by

Miss Loretta J. Kiersky, Librarian
Central Research Library
Air Reduction Company, Inc.
Central Research Laboratories
Murray Hill, New Jersey.

Very truly yours,
F. E. McKenna, Supervisor
Information Center

Dear Frank:

This system was developed gradually by the ASC librarian over the past year. All books have been arranged on the shelves according to their primary letter and a few according to the secondary letter. It has not yet been possible to mark each book with its letter but the catalog card is so marked. Note the books and periodicals are combined, by subject.

Each of the primary letter categories averages about 8-9 shelves of books & periodicals.

CLASSIFICATION SYSTEM USED IN COMPANY LIBRARY

A — general, non-technical (e.g., news magazines, odd subjects)
BA — general aviation & astronautics
BB — aircraft (aerodynamics, technical data)
BC — missiles
BD — astronautics (orbits, satellite stations, etc.)
BE — descriptive data on Moon and other planets
(Category BE may be transferred to the G section)
CA — general civil engineering
CB — public works and contruction
CC — water and sewage, hydrology
CD — housing
DA — general physics
DB — atomic energy
DC — solar energy
DD — unconventional energy systems
EA — general electronics
EB — specific electronic devices (except as below)
EC — microwave systems — radar, hiran
ED — electrical engineering
EE — catalogs
FA — general mapping
FB — photogrammetry
FC — surveying
FD — photo interpretation
FE — geodesy & shoran
GA — descriptive data on general geographic areas (more than 1 continent)
GB — Asia
GC — Africa
GD — Latin America
GE — Europe
GF — United States
GG — Oceania, including Australia & New Zealand
GH — Arctic and Antarctic areas
GJ — (may be set up later for present BE category)
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HB — human factors in engineering & devices
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HD — biological data, including medicine
HE — general education
JA — general chemistry
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JC — plastics
KA — general mathematics
KB — statistics
KC — operations research
LA — general automation
LB — computers, programs
MA — general mechanical engineering
MB — tooling, devices for
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ND — films
PA — general linguistic
PB — dictionaries
PC — technical writing
Q — general technical materials — scientific periodicals, general research texts, catalogs of scientific reports
R — general reference material
SA — general land
SB — agriculture
SC — conservation of natural resources
TA — general transportation
TB — highway transportation
TC — water transportation
TD — railroad transportation
TE — air transportation (excludes technical data on aircraft)
UA — general business administration
UB — marketing
UC — office administration
UD — admin. of research labs.
UE — sales management
UF — labor and personnel problems
UG — records admin.
UH — business statistics
VA — general public administration
VB — government procurement
VC — finance
VD — economics
VE — law
VF — taxation
VG — public planning
WA — general ground resources

WB — mining (coal, minerals, etc.)
WC — petroleum, incl. refining
WD — metals — processing & refining
XA — general earth sciences
XB — geophysics, including aerial exploration
XC — meteorology (except for weather and climate for specific areas, which will be found under G)
XD — oceanography, hydrography
XE — geology
YA — US patents — Official Gazette and files of patents, books on use of patents
YB — NASA reports in series
YC — AGARD reports in series
ZA — general bibliographic
ZB — documentation techniques and case histories
ZC — archives
ZD — library admin.

RINEHART S. POTTS
Librarian
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Philadelphia, Pa.

Dear Frank:

The Editor of the Documentation Digest regretfully accepts the resignations of the following people and thanks them for their help and loyal support during the past months.

Mrs. A. R. Bergen, University of Wisconsin.

Miss Janet Hollander, Librarian Dixie Cup Div. of American Can Co., Easton, Pa.

Mrs. Hazel Izzo, Librarian, General Dynamics Telecommunications, Rochester, Pa.

Miss Marguerite Moran, Metal & Thermit Corp., Rahway, N. J.

Miss Marie Tashim, Now a Fulbright Fellow.

Miss Blance B. White, Silver Spring, Md.

The response to our appeal in the Summer Issue of Sci-Tech News was very gratifying and the following abstractors are now busily contributing their work.

Mr. C. E. Kp, Chemstrand Research Center, Durham, No. Carolina.

Mr. F. W. Lancaster, Librarian, Babkock & Wilcox Co., Barberton, O.

Miss Henrietta Versteeg, Libn., Amer. Standards Assn., New York.

Miss Jean P. Ouderkirk, Yerkes Research Lab. Library, Buffalo, N. Y. (E. I. du Pont de Namours Co.)

Miss Paula M. Strain, Libn., IBM Space Guidance Center, Owego, N. Y.

Miss Judith C. Leondar, Inst. for Defense Analyses, Cambridge, Mass.

Although we gained as many new abstractors as we lost our list of journals is still not as well covered. Naturally, when new people volunteer they have to limit themselves to the journals they receive which need abstracting. The titles do not obligingly duplice themselves as people drop out and new ones take their place.

We can use more help. It is an appreciated and rewarding way of doing your bit.

Alice V. Neil

BOOK REVIEW NOTE

T.P.I. List, New York, Hafner, 1961 — $6.50

This is an index indicating frequency and availability of the title pages and index sections of some 1,400 British, 400 French and Belgian, 150 Italian, 65 Spanish and 275 Dutch and Scandinavian peridocals. The information was gathered by means of questionnaires sent to publishers early this year. Two minor omissions were: British Interplanetary Society Journal and British Ceramic Society Transactions.

Nevertheless, the compilation is an extensive one and should prove to be of great assistance to any one faced with scheduling periodicals for shipment to the bindery. Perhaps it will also have some effect in encouraging Librarians to encourage publishers to adopt a common standard for the manner of publication of title pages and indexes.

G. E. Halpern

NOTICE

Nov. 6-8, 1961. American Documentation Institute annual convention, Somerset Hotel, Boston, Mass. A **State of the Art Symposium** sponsored by the National Science Foundation has been scheduled for Tuesday, Nov. 7 at Kresge Auditorium, M.I.T. Specialist sessions on advanced retrieval theory, machine print-out of non-standard characters and documentation for professional societies will be held. For information write to:

P. D. Vachon, Literature Physicist
Melpar, Inc., Applied Science Division
11 Galen Street
Watertown 72, Mass.

Technical papers on documentation and related subjects are solicited for the volunteer papers session schedules for Wednesday, November 8. For further details on these papers write to:

Dr. Richard H. Orr, Director
Institute for Advancement of
Medical Communication
33 East 68th Street
New York 21, N. Y.

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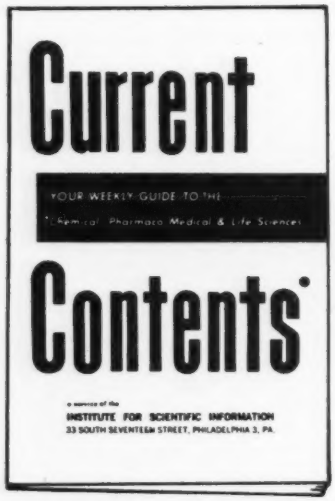

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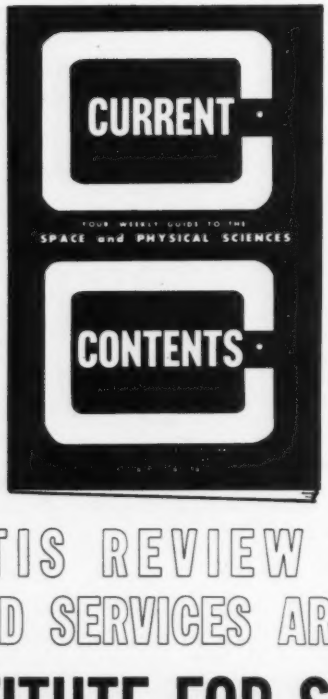

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A STRESS ANALYSIS OF A STRAPLESS EVENING GOWN

(This article appeared in the November 1956 issue of the INDICATOR, and is being reprinted for your enjoyment. The article may well be a for your enjoyment. The author is Charles E. Siem of the CALIFORNIA ENGINEER.

Since the beginning of recorded history, the human being has worn some type of clothing either for protection or warmth. However, the present trend among the "fair sex" is to wear clothing not for protection or warmth, but solely to attract the attention of the opposite sex. To be more specific, it is through the use of clothing that the female most effectively catches the eye of the very appreciative but totally unsuspecting male.

A variety of methods are employed to bring about this libido awakening infliction on the poor male. One very popular method employed by the female is to wear transparent, or seemingly transparent, cloth to good advantage in certain areas. A common example is the transparent nylon blouse. Another powerful attention-gathering device is the tightly fitted garment. A well known example of this type of weapon is the sweater. Yet another provoking method is by actually reducing the amount of body area covered by cloth. A good example of this method is the modern bathing suit. A delightful device which has sufficiently aroused the masculine sex is the use of durable but fragile appearing cloth which gives the impression that at any moment the garment will slip down or that, better yet, certain parts might slip out of place. The best example of this method of attracting the attention of the weak and susceptible male is the strapless evening gown.

Effective as the strapless evening gown is in attracting attention, it presents tremendous engineering problems to the structural engineer. He is faced with the problem of designing a dress which appears as if it will fall off at any moment and yet actually stays up with some small factor of safety. Some of the problems faced by the engineer readily appear from the following structural analysis of strapless evening gowns.

If a small elemental strip of cloth from a strapless evening gown is isolated as a free body in the area of plane A of Fig. 1, it can be seen that the tangential force F is balanced by the equal and opposite tangential Force F. Also the downward vertical force W caused by the weight of the dress below plane A is balanced by the Force F acting vertically upward due to the stress in the cloth above plane A. Therefore, since the algebraic summation of vertical and horizontal force is zero, and no moments are acting, the elemental strip is in equilibrium. But consider an elemental strip of cloth isolated as a free body in the area of plane B of Fig. 1. The two tangible forces F-1 and F-2 are equal and opposite as before, but the force W due to the weight of the dress below plane B is not balanced by an upward force F because there is no cloth above plane B to supply this force. The algebraic summation of horizontal forces is zero but the algebraic summation of vertical forces is not. Therefore, this elemental strip is not in equilibrium but it is imperative, for social reasons, that this elemental strip be in equilibrium. If the female is naturally blessed with sufficient pectoral development, she can supply this very vital force and thereby place the elemental strip in equilibrium. If she is not, the engineer has to supply this force by artificial methods.

In some instances the engineer has made use of friction to supply this force. The friction force is expressed by F equals fN where F is the frictional force, f is the coefficient of friction and N is the normal force acting perpendicularly to F. Since for a given female and a given dress, f is constant; then to increase F, the normal force N has to be increased. One obvious method of increasing the normal force is to make the diamater of the dress at line C, Fig. 2 smaller than the diameter of the female at this point. This has, however, the disadvantage of causing the fibers along line C to collapse and if too much force is developed the wearer will experience undue discomfort.

As if the problem were not complex enough, some females require that the back of the gown be lowered to increase the exposure and correspondingly attract more attention. In this case the horizontal forces F-1 and F-2 are no longer acting horizontally, but are acting downward at an angle shown by T-1 and T-2 of Fig. 1. Therefore, there is a total downward force equal to the weight of the dress below plane B plus the vector summation of F-1 of the two inclined forces, T-1 and T-2. But this vector sum F-1 increases in magnitude as the back is lowered because F-1 equals 2T sin a and the angle a increases as the back is lowered. Thus the vertical upward force F which has to be supplied for equilibrium is greatly increased for low-back gowns. Also since there is no cloth around the back of the wearer, the force acting through the elemental strip B, perpendicular to the vertical axis of the female, is greatly reduced and it is this force which keeps the evening gown of the lady from falling forward, away from the wearer—attracting attention by this method is considered unfair tactics among females. Therefore, for very low-back evening gowns the engineer has to resort to bone or wire frameworks to supply sufficient and perpendicular forces.

If the actual force supplied is divided by the minimum force that is required to hold the dress up, the resulting quotient defines a factor of safety. This factor of safety should be as large as possible, but there the engineers run into the difficulty of keeping frameworks light and inconspicuous. Therefore, a compromise must be made between a heavy framework and a low factor of safety. With ingenious use of these frameworks, the backs of strapless gowns may be lowered until cleavage is impending. Assuming the female is naturally endowed to supply the vertical force F still leaves the problem incomplete unless an analysis is made of the structures supplying this force. These structures are of the nature of cantilever beams. Fig. 4 shows one of these cantilever beams (minus any aesthetical details) removed as a free-body (and indeed many such beams can be, in reality, removed as free-bodies). Since there are usually two such divided, the force acting on any one beam is F/2. This force is distributed over the beam from A to F of Fig. 2. More exposure and correspondingly more attention can be had by moving the dress line from A toward B. Unfortunately there is a limit stress, P equals vertical force F/2, and A equals area over which the bearing stress acts, then

$$S \text{ equals } P/A \text{ equals } \frac{F}{2} \times \frac{1}{A}.$$

Since F/2 is constant, if the area A is decreased, the bearing stress S must increase. The limit of exposure is reached when the area between B and C is reduced to a value which causes the bearing stress to increase to the "danger point."

A second condition exists which also limits the amount of exposure. The vertical force F/2, is balanc-

ed by a shear force S acting on an area from D to E and by an internal moment M, Fig. 4. The moment M causes tension in the fibers of the beams between E and A and compression in the fibers between C and D. As the dress line is moved from A toward B the moment M is increased, thereby increasing the tension and compression of the fibers. The second limit of exposure is reached when the tension and compression stresses in these critical areas reach the "danger point."

Since these evening gowns are worn to dances, an occasional horizontal force F shown in Fig. 4, is accidentally delivered to the end of the beam causing impact loading. This impact loading causes compression in all the fibers of the beam. This compression tends to cancel the tension in the fibers between E and B but it increases the compression in the fibers between C and D. The critical area is at point D, as the fibers here are subject not only to compression due to moment and impact, but also to shear due to the force S. With the combination of a low, heavy dress and impact loading, the fibers at point D can be stressed to the "danger point."

There are several reasons why these properties have never been determined. For one, there is a scarcity of these beams for evperimental investigation. Many females have been asked to volunteer for experiments along these lines in the interest of science, but, unfortunately, there have been no co-operative subjectse. Also, there is the difficulty of the investigator having the strength of mind to ascertain purely the scientific facts. Meanwhile, trial and error and shrewd guesses will have to be used by the engineer in the design of strapless evening gowns until thorough investigations can be made.

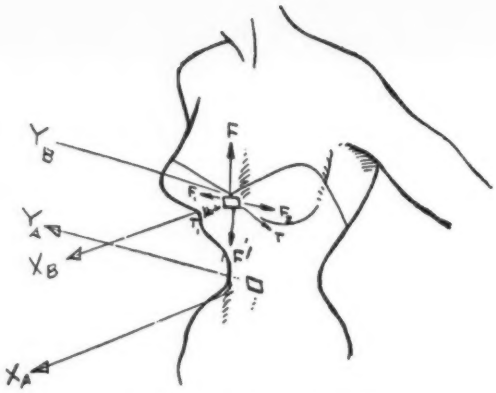

Figure 3—Forces Acting on Cloth Element

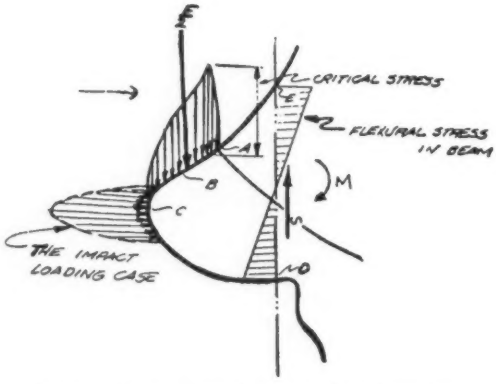

Figure 4—Force Distribution of Cantilever Beam

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